

28

BETTER HOMES



Produced for the
LEHIGH PORTLAND CEMENT COMPANY
by
THE ARCHITECTURAL FORUM SERVICE DIVISION

The Lehigh Portland Cement Home Competition

From Which the 28 Better Homes Illustrated in This Book Were Selected by a Jury of Eminent Architects

FROM the point of view of the prospective home owner, one of the most instructive and satisfactory methods of obtaining suggestions as to the planning and designing of the prospective home is to examine carefully the plans which are developed in an authoritative national architectural competition for the design of small houses.

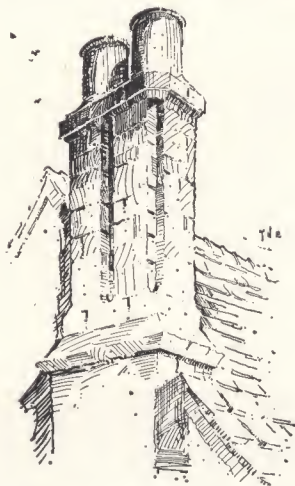
The Lehigh Portland Cement Home Competition, recently conducted with the coöperation of the architectural profession, has proved to be one of the most interesting and successful contests of that nature inaugurated and carried out in the United States. This competition was conducted by THE ARCHITECTURAL FORUM, the leading professional journal of the architectural field, and resulted in the submitting of several hundred designs of residences by architects from every part of the country. Immediately after the closing of the competition these designs were carefully examined by the unusually competent jury described on the next page. The prize-winning and honorable mention competition houses are here published and should serve to provide many valuable suggestions for those who are contemplating the building of moderate cost residences of either bungalow or two-story type with exteriors of portland cement stucco.

For this competition a total of \$4,100 was offered in the form of prizes and honorable mention awards. The competition was divided into two parts, one being for a six-room, two-story house of a cubic contents of not to exceed 26,000 cubic feet, and the other for a five-room bungalow or story-and-a-half house of not to exceed 20,000 cubic feet. A grand prize of \$1,000 was given for the best pair of designs submitted by the same architect, one in each class. Each class then carried four prizes of \$500, \$300, \$200, and \$100, respectively, and ten honorable mention awards of \$50 each.

Within the past few years there has been developed in this country a method of building known as "portland cement concrete masonry." This form of construction, fully described on page 23, consists of the use of portland cement concrete building block or tile for walls and partitions of the house, with portland cement stucco to form the exterior surfacing, offering an unlimited range of texture and color

to meet the tastes of home owners and architects. The use of portland cement building units constitutes a type of construction which insures economy, permanence, fire-resistiveness, and low cost of maintenance and depreciation. In this competition, the architectural profession was invited to demonstrate the possibilities and practicability of the use of concrete masonry construction by designing attractive homes using portland cement materials for exterior facing, walls, partitions, floors and roofs.

The purpose of the Lehigh Portland Cement Home Competition has been to introduce more definitely to home builders the merits of concrete masonry construction and the dependability of Lehigh portland cement, which, as the most important constituent of concrete and stucco, must be of the best grade to insure permanent satisfaction for the home builder. The designs presented in this book testify to the excellent results of the Lehigh Portland Cement Home Competition, and prospective home builders will find many points of interest and instructive value. While this book is not large, it is an unusually complete treatise presenting not only a number of interesting house plans, but giving full information on concrete masonry, on obtaining textures and colors in portland cement stucco, on estimating the cost of a dwelling from any plan, and giving specific instructions as to the reading of working drawings, with a complete table of standard architectural symbols used in small house plans.



Chimney Detail for English Cottage
Illustrated on Page 9

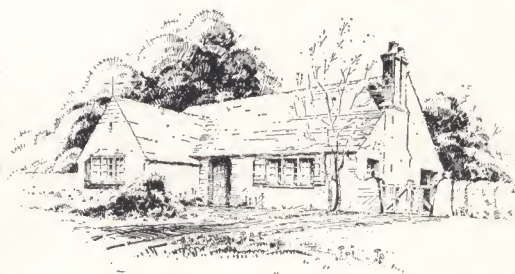
The Selection of Twenty-Eight Better Homes

THE value of the residential designs developed through the Lehigh Portland Cement Home Competition, 28 of which are presented in this book, can be fully appreciated only when it is realized that the five architects who so graciously served on the jury are counted among the most eminent practitioners in the field of American domestic architecture.

Aymar Embury II, of New York, who acted as Chairman of the Lehigh Jury, enjoys an enviable renown for the charm of his houses and the refreshingly ingenious plans which he provides for them.

Charles G. Loring, of Boston, is a master in the use of the Colonial style from New England, where Colonial architecture is seen at its best. He is a well known writer on this subject.

Harrie T. Lindeberg, of New York, is the designer of some of the most charming country homes in the eastern part of the United States,



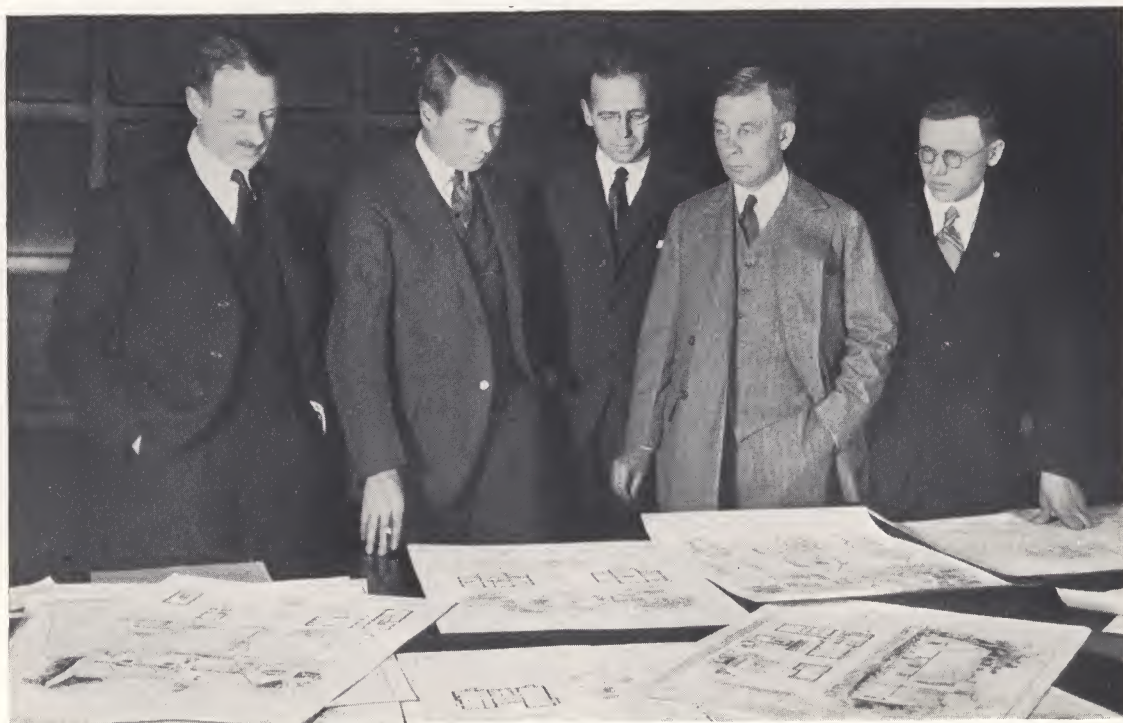
and has specialized for a number of years on important residential work.

David Adler, of Chicago, has similarly given to middle western cities and suburbs some of their most admired buildings. His work is characterized by appealing beauty of design, purity of style and

that most elusive quality—simplicity of design.

D. West Barber, of the firm of Barber & McMurray, of Knoxville, Tenn., is playing a large part in the architectural renaissance which is taking place in southern home building.

To know that this group of talented architects, representing different sections of the country, carefully considered every competition entry and agreed that those included in this book offer suggestions in design, plan and construction worthy of presentation to the American public, is to know that each following page of this book merits the interested study of prospective home builders, architects and contractors everywhere.



Names of Architects, Reading Left to Right: DAVID ADLER, CHICAGO; AYMAR EMBURY II, NEW YORK; CHARLES G. LORING, BOSTON; HARRIE T. LINDEBERG, NEW YORK; D. WEST BARBER, KNOXVILLE, TENN.

The Lehigh Grand Prize House

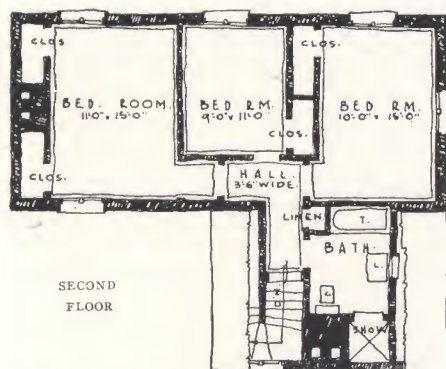
First Prize Six-Room Concrete Masonry House

Angus McD. McSweeney, *Architect*
3245 Octavia St., San Francisco, California

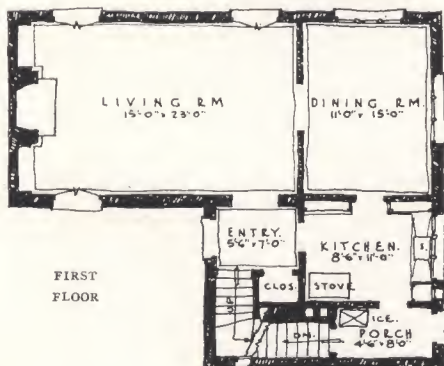


20,000 CUBIC FEET, INCLUDING CELLAR

EXTERIOR OF PORTLAND CEMENT STUCCO OF WEATHERED PUTTY COLOR

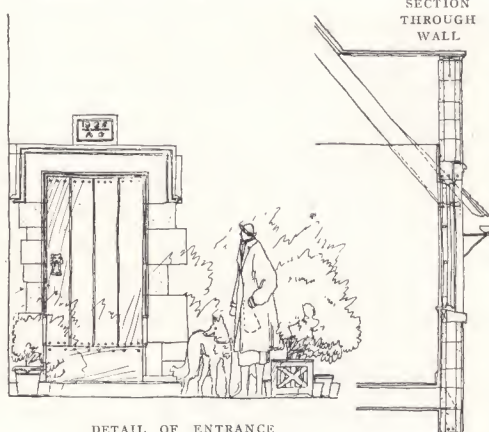


SECOND FLOOR



FIRST FLOOR

THIS HOUSE, TOGETHER WITH BUNGALOW SHOWN AT TOP OF PAGE 16, WON THE GRAND PRIZE



DETAIL OF ENTRANCE

THE entire first floor of this English type house consists of a portland cement concrete slab laid directly on the ground and reinforced over cellar. In the living room, dining room and entry, the architect suggests finished floors of buff colored cement tile laid in a bed of grout over the concrete slab. The kitchen, pantry, hall and bedroom will have linoleum floors laid on the concrete slab. This interesting type of construction offers the advantages of economy and durability.

The exterior stucco is to be putty shade with a faint indication of color in it to give an appearance of age and to take on a weathered look, the texture to be uneven and in some places very rough, showing occasional marks of the trowel, such as the Spanish or French trowel finishes No. 6 or 11 on pages 28 and 29. Roof is of portland cement-asbestos shingles.

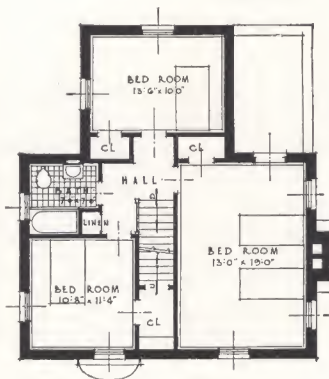
Second Prize—Six-Room House

Designed for Construction in Lehigh Portland Cement Building Block and Stucco

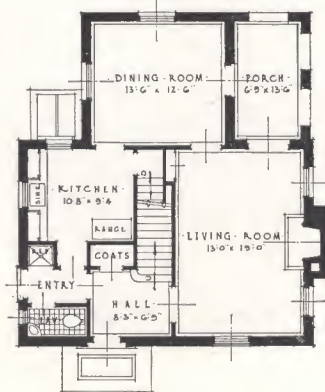
H. A. Surman, *Architect*
300 Marquette Building, Detroit, Michigan



EXTERIOR OF WARM YELLOWISH GRAY STUCCO AND SMOOTH TROWELED QUOINS



SECOND FLOOR

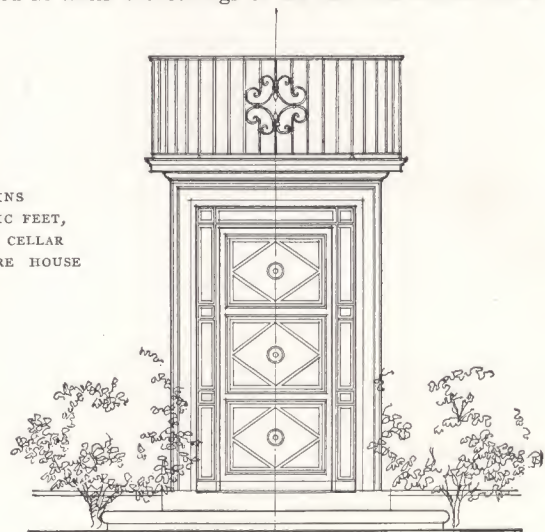


FIRST FLOOR

THIS interesting design has been suggested by the old villas and farmhouses of Italy. The exterior stucco is to be a warm, yellowish gray color finished in the Italian style shown as No. 2 on page 28. The quoins (blocks at corners) are of smooth troweled portland cement with slight projection beyond the rough stucco walls. Exterior frames and sash are to be of wood, painted gray-green with shutters blue-green. All lintels and sills are of pre-cast portland cement concrete. The roof is to be of cement-asbestos shingles or concrete tile.

This house is of fire-safe construction throughout, using steel joists. Partitions are of 4-inch concrete block, while metal lath is used in walls and ceilings of the first and second floors.

CONTAINS
25,346 CUBIC FEET,
INCLUDING CELLAR
UNDER ENTIRE HOUSE

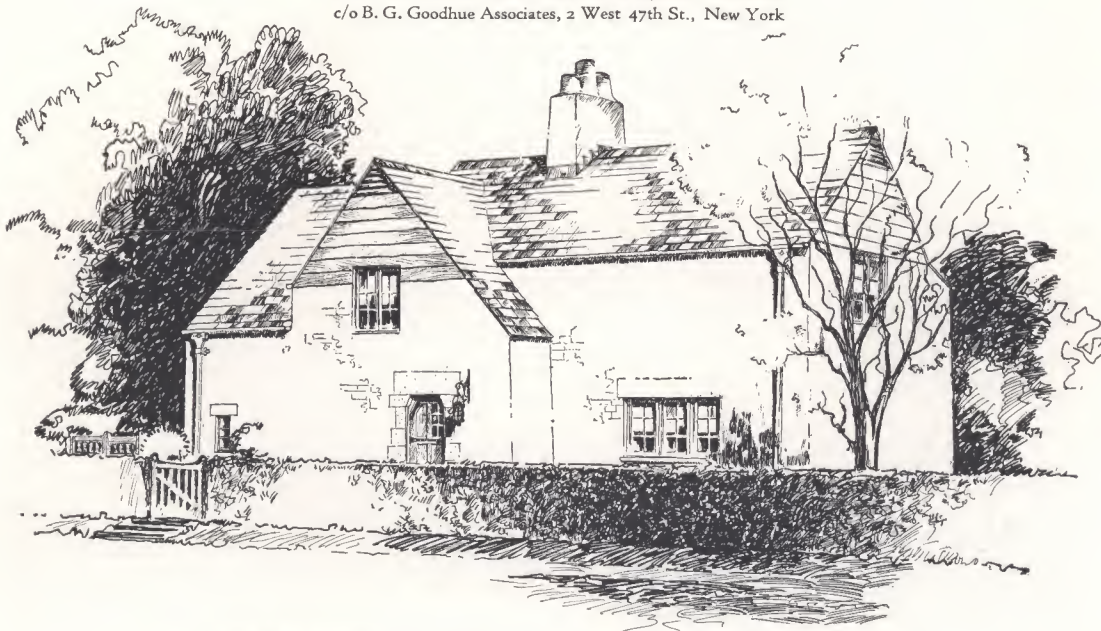


ENTRANCE DETAIL

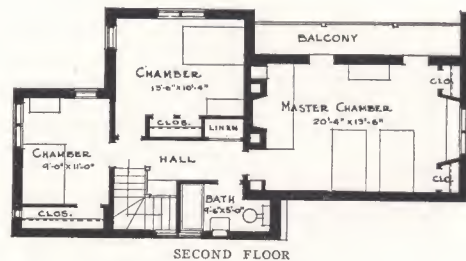
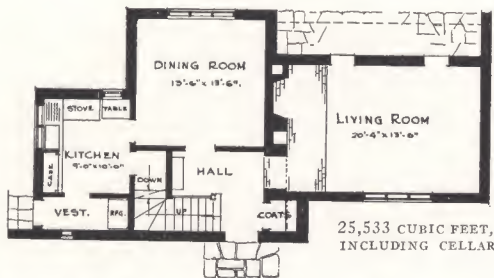
Third Prize—Six-Room House

Designed for Construction in Lehigh Portland Cement Building Block and Stucco

Emil Backstrom and Herbert Magoon, *Architects*
c/o B. G. Goodhue Associates, 2 West 47th St., New York



EXTERIOR OF BROWN STUCCO WITH WEATHERED TRIM AND GABLES IN HEWN BOARDS



SECOND FLOOR

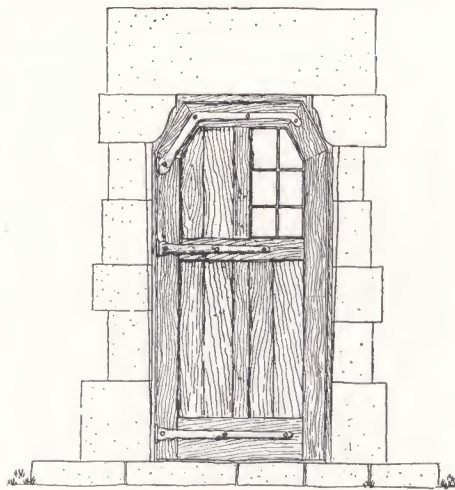
THIS design has been studied with the idea of developing the back of the house as the "living side," taking full advantage of garden. This side should face south or east.

Exterior walls are of portland cement concrete building blocks (see page 23) with stucco of buff or brown tint to harmonize with variegated roof of cement-asbestos shingles. Special interest is developed by varying thicknesses of stucco, occasionally allowing forms of blocks to express themselves. The architects recommend the Spanish texture of stucco, No. 6 on page 28.

Doors and casement windows are of wood, stained to emphasize grain. End gables and roof ventilators are similarly stained. The door hinges and the lamp are of wrought iron.

Specifications call for structural concrete floors and beams over the living room, so upon removal of forms the ceiling need be painted only, while texture of the grain will show.

Fire-resisting materials have been used wherever practical. The structural walls are of concrete blocks and furring tile. The portland cement concrete furring tile are carried up the entire wall between rafters and floor joists to form a fire-stop. Concrete structural floors are used for living room and master bedroom. Flues are all lined, and a great hearth prevents danger of flying sparks from the fireplace.



DETAIL OF ENTRANCE DOOR

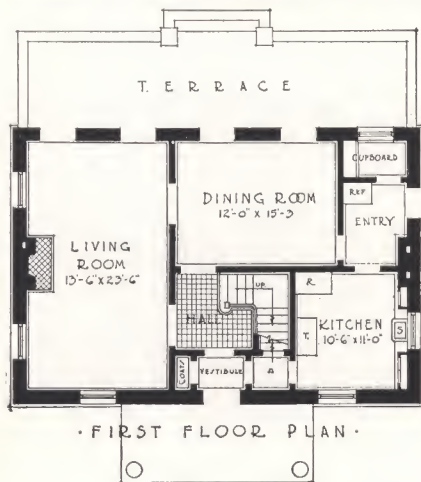
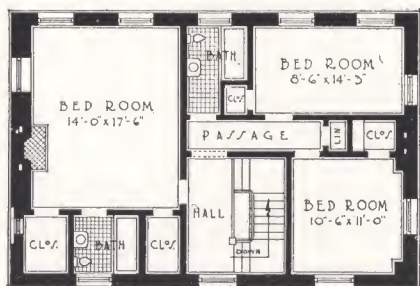
Fourth Prize—Six-Room House

Designed for Construction in Lehigh Portland Cement Building Block and Stucco

Francis Keally, *Architect*
28 East 39th St., New York



EXTERIOR OF BUFF STUCCO WITH CAST CEMENT TRIM



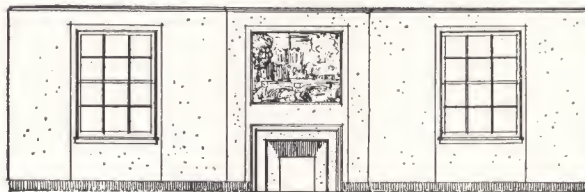
FIRST FLOOR PLAN

THIS interesting house of Spanish inspiration is designed for an exterior stucco finish obtained by mixing yellow ochre with natural gray Lehigh portland cement with a Colonial sanded surface No. 1 on page 28. The shutters are to be painted a gray-green. The terrace leading to the main entrance is to be built of concrete tiling and can be used as a porch by installing an awning attached to the house the full width of the terrace.

The terrace on the opposite side of the house is upon the garden side of the building, and is reached either through the dining room or living room by means of French doors. A sunken garden is to be planned on an axis with this terrace and having a pool of water as a chief point of interest.

The exterior walls are to be of 12-inch hollow concrete block and furred and plastered on the inside. All ceilings to be plaster on metal lath. Stairs leading to the basement to be of metal with door leading from first floor to basement of metal as well as doors leading to the furnace room. The flat roof of this house is to be of concrete with built-up roofing. The architrave around the entrance door is of cast portland cement concrete.

THIS HOUSE CONTAINS 25,989 CUBIC FEET

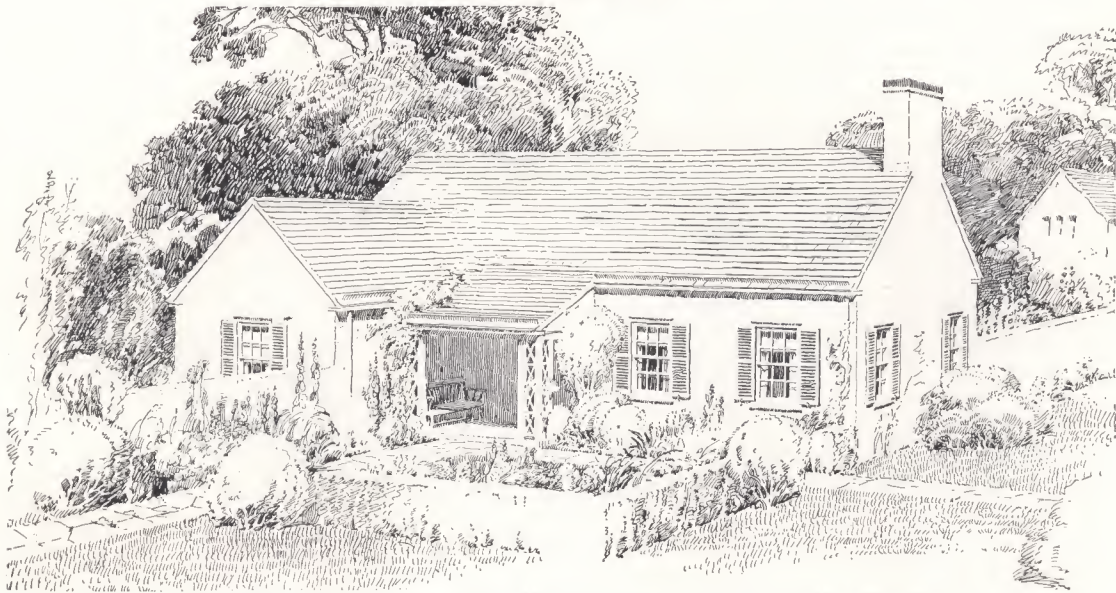


DETAIL OF LIVING ROOM WALL WITH FIREPLACE

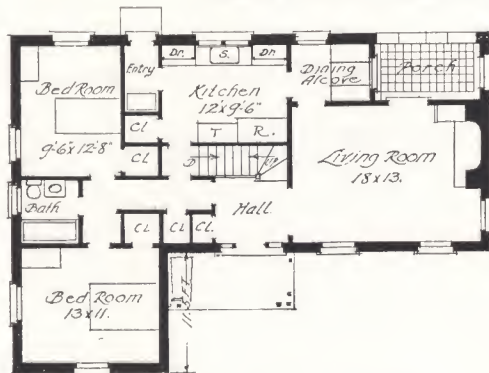
First Prize—Five-Room Bungalow

Designed for Construction in Lehigh Portland Cement Building Block and Stucco

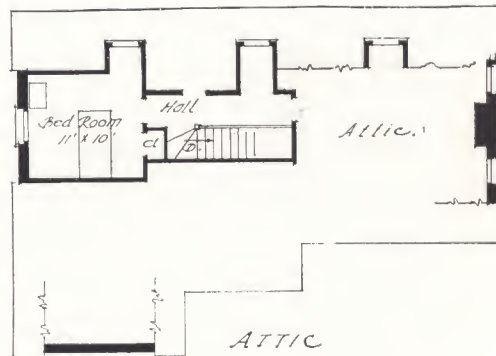
John Floyd Yewell and Harry Starr, Architects
10 East 43rd St., New York



EXTERIOR WALLS OF NATURAL GRAY PORTLAND CEMENT STUCCO WITH WARM BUFF CAST



CONTAINS
19,704 CUBIC
FEET,
INCLUDING
2821 CUBIC
FEET
IN CELLAR



THIS attractive bungalow is of concrete masonry construction with the exterior stuccoed in gray portland cement with a warm buff cast and of the Colonial texture No. 1 shown on page 28. The exterior trim and window sash are of wood painted white, and the shutters to be painted blue-green. The architects specify the roof to be of cement-asbestos or concrete shingles in random widths with the color range of browns and purples.

Fire-safe, permanent construction is assured by the use of Lehigh portland cement masonry construction. The bearing partitions are of 3-inch to 6-inch concrete tile. All ceilings are to be plastered on metal lath. Fire stops are provided at the ends of joists where they bear on walls. A forecourt is to be provided in front of the house surrounded by a picket fence and planted with flowers.



ELEVATION OF ENTRANCE AND WING

Second Prize—Five-Room Bungalow

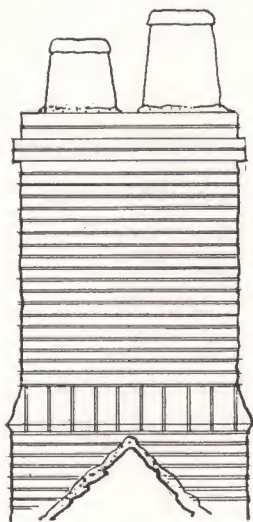
Designed for Construction in Lehigh Portland Cement Building Block and Stucco

Walter L. Moody, *Architect*

1528 6th St., Santa Monica, California

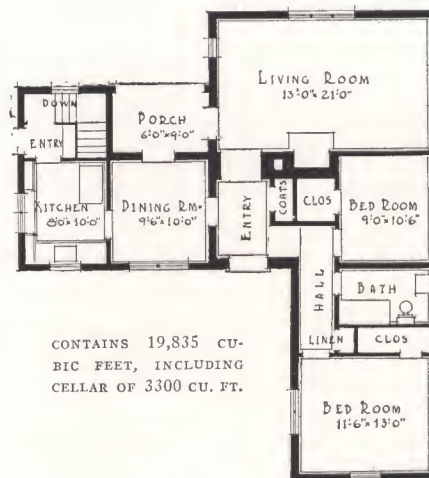


EXTERIOR OF BUFF STUCCO WITH PAINTED GRAY-BLUE TRIM



CHIMNEY DETAIL

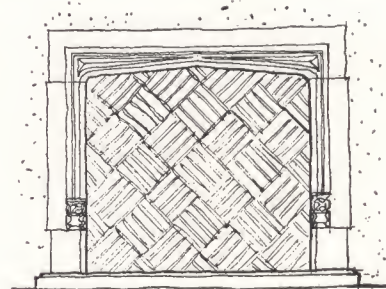
A SECTION THROUGH EXTERIOR WALL IS SHOWN AT RIGHT AND INDICATES METHOD OF CONCRETE MASONRY CONSTRUCTION



CONTAINS 19,835 CUBIC FEET, INCLUDING CELLAR OF 3300 CU. FT.

THIS interesting English type dwelling has been carefully designed of concrete masonry construction. Precautions against fire loss include provision of all basement walls and partitions in concrete block with ceiling of furnace room of plastered metal lath. Fire stops are provided at the ends of all floor joists by using concrete veneering tile on the outside walls with shorter blocks between joists. Eaves are fireproofed with portland cement stucco on metal lath.

The exterior stucco is natural gray cement, colored buff and finished in the English texture No. 7 on page 29. Entrance door is stained dark brown, being built up of boards and battens with wrought iron strap hinges. Exterior windows and trim are painted gray-blue. All other woodwork is stained and finished in gray-brown.

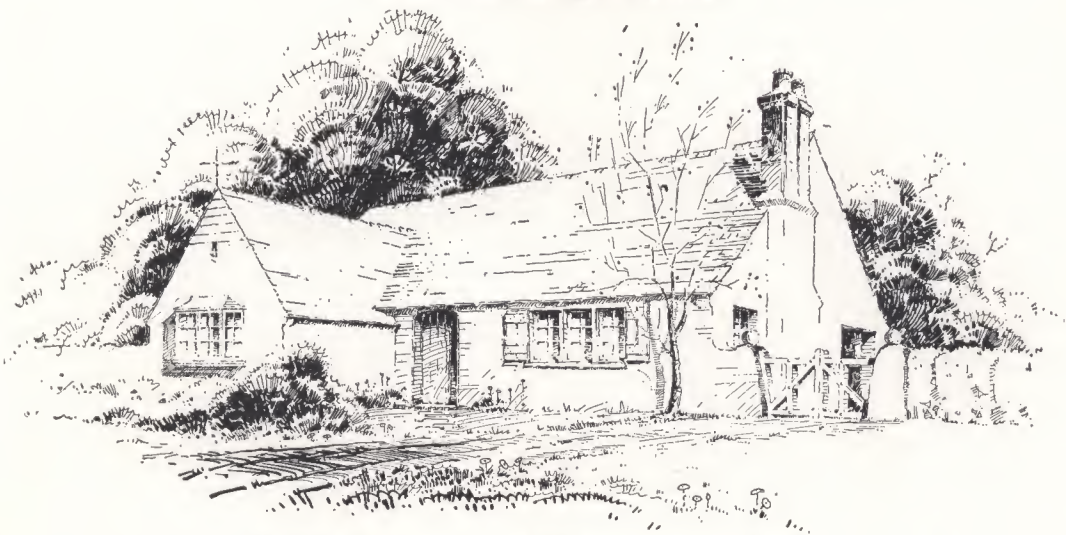


PRE-CAST CONCRETE STONE MANTEL

Third Prize—Five-Room Bungalow

Designed for Construction in Lehigh Portland Cement Building Block and Stucco

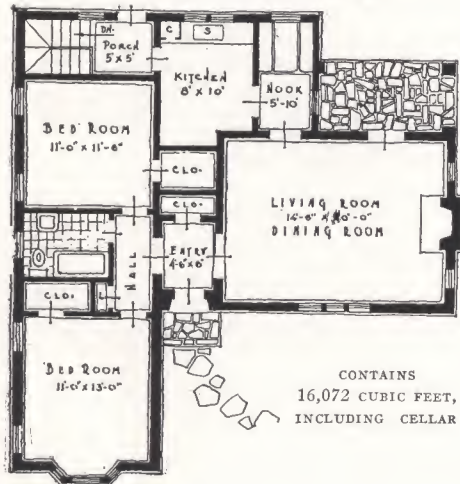
Frederick H. Reimers, *Architect*
Tip Top Tribune Tower, Oakland, California



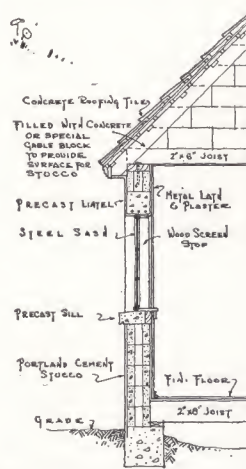
EXTERIOR OF BUFF STUCCO WITH ROOF OF BLENDED CONCRETE TILE



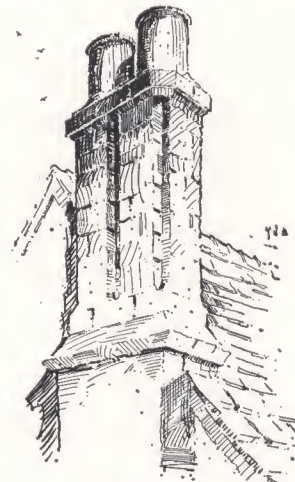
DETAIL OF HOODED FIREPLACE



CONTAINS
16,072 CUBIC FEET,
INCLUDING CELLAR



SECTION SHOWING CONSTRUCTION



DETAIL OF CHIMNEY

THE exterior of this house is of Lehigh portland cement stucco colored in buff colonial tint and warm yellow, using the French brush finishing, No. 10, on page 29. The exterior doors are antiqued in brown. Metal windows have antiqued copper finish, and shutters are of the same texture and finish as doors. The cement-asbestos tile roof is of blended colors from gray to purple. Porch floor is of rough surfaced concrete flags.

To render the house safe from exterior fire, these non-burnable items have been used: Lehigh concrete block outside walls; steel sash and windows; cement-asbestos concrete roof tile; concrete posts and lintels on porch; portland cement plaster on metal lath under eaves, and concrete block chimney.

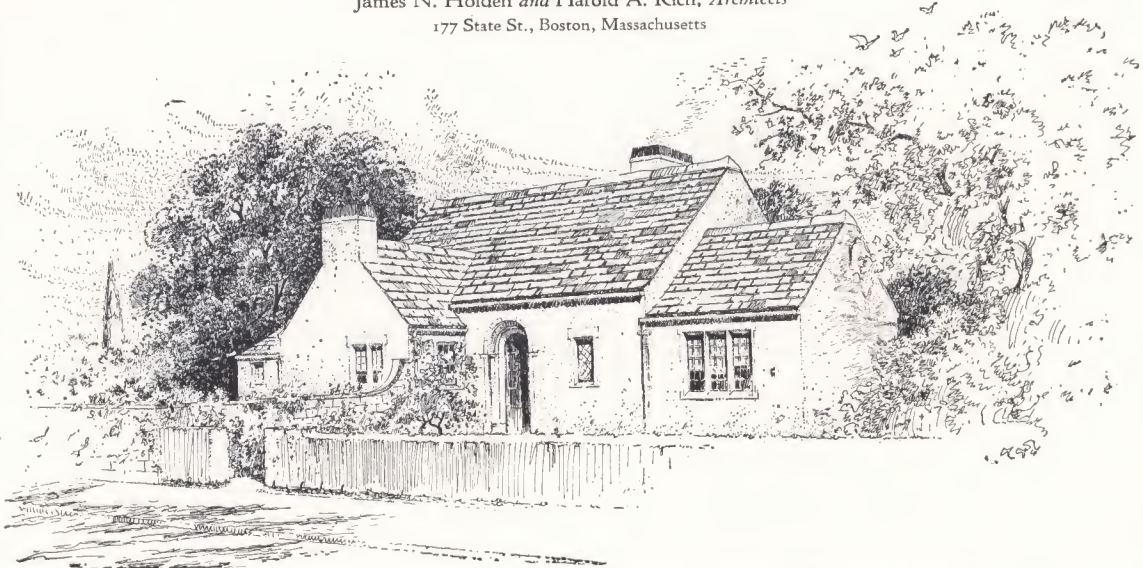
To prevent fire spreading inside, use has been made of: plaster on metal lath over wood partitions, and plaster on metal lath and steel furring around mantel over fireplace.

Fourth Prize—Five-Room Bungalow

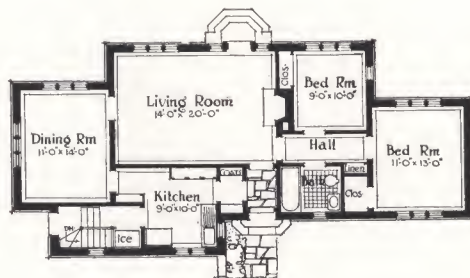
Designed for Construction in Lehigh Portland Cement Building Block and Stucco

James N. Holden and Harold A. Rich, *Architects*

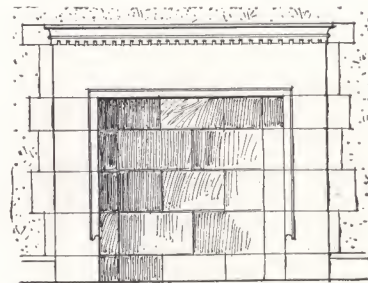
177 State St., Boston, Massachusetts



EXTERIOR OF GRAYISH BROWN STUCCO WITH CEMENT TILE ROOF BLACKENED TO GIVE SLATE EFFECT



CONTAINS 19,949 CUBIC FEET

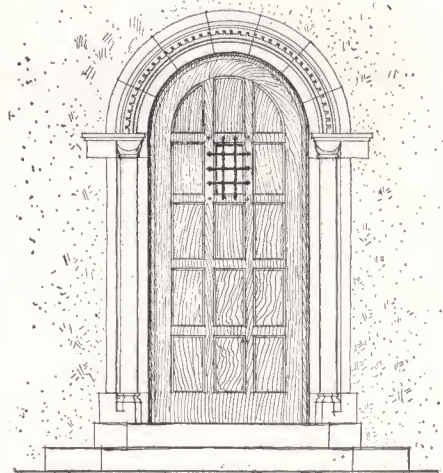


DETAIL OF FIREPLACE

THE construction of this attractive English cottage is of Lehigh portland cement building products throughout; the house is fully safe against loss by fire or rapid depreciation. Concrete building block and tile are used for exterior walls, interior partitions and chimneys. Blocks are cast in place for foundation walls and footings, basement floor, exterior steps and chimney caps. Pre-cast concrete (see page 24) is used as artificial stone for sills, lintels and mullions for doors and windows; mantel and hearth; foundation drain; kitchen sink and laundry trays. Terrazzo (a combination of portland cement and marble chips) is used for floors in vestibule and bathroom.

The exterior is of grayish-brown, obtained by mixing brown sand with Lehigh portland cement and scrubbing with a stiff brush and water before stucco has set hard, so as to expose the sand. The stucco texture is Modern American No. 5, an illustration of which will be found on page 28.

The roof is of cement-asbestos shingles colored with manganese black to produce a striking effect. The cast stone at door and windows and for doorsteps is portland cement, colored buff with streaks and mottlings of brown and reddish brown obtained by using yellow, red and brown oxide pigments.

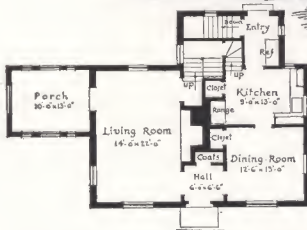
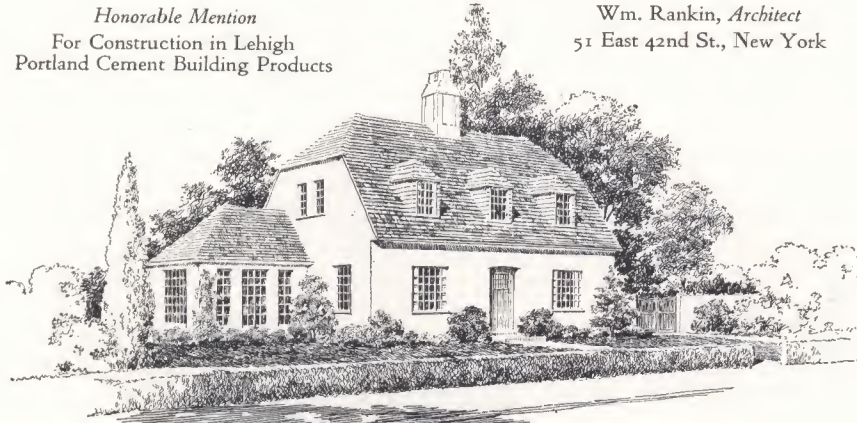


ENTRANCE DOOR

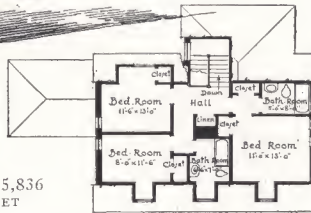
Six-Room House Showing French Influence

Honorable Mention
For Construction in Lehigh
Portland Cement Building Products

Wm. Rankin, *Architect*
51 East 42nd St., New York

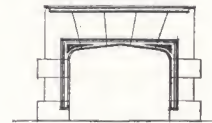


CONTAINS 25,836
CUBIC FEET



EXTERIOR OF PORTLAND CEMENT STUCCO COLORED A WARM BUFF

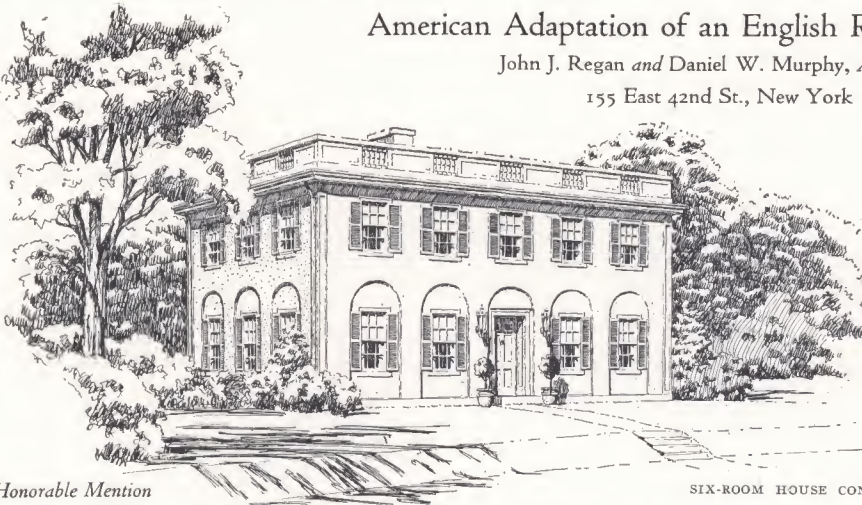
WALLS and partitions of this house are constructed of Lehigh portland cement concrete blocks, with exterior stucco in the English Cottage Finish shown as No. 3 on page 28. Windows are standard size steel casement type painted olive green; exterior door is also painted green. The roof is of cement-asbestos shingles with green and purple predominating. The architect's specifications call for fire protection, including the isolation of the boiler room with concrete block partitions and metal-covered door. The living room mantel is pre-cast concrete stone.



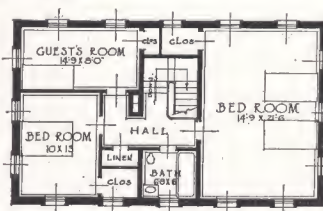
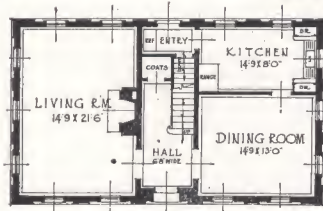
MANTEL DETAIL

American Adaptation of an English Renaissance Style

John J. Regan and Daniel W. Murphy, *Architects*
155 East 42nd St., New York



Honorable Mention



EXTERIOR OF NATURAL GRAY PORTLAND CEMENT TINTED WITH YELLOW OCHRE



ENTRANCE DETAIL

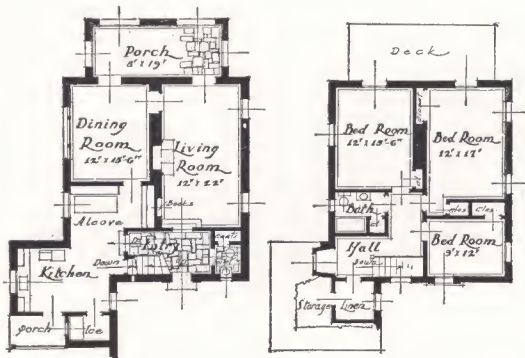
SIX-ROOM HOUSE CONTAINING 24,976 CUBIC FEET

THIS design provides a dignified, formal home with comparatively little exterior detail. The stucco is to be the troweled, rough-cast Italian finish shown as No. 2 on page 28 and made up of Lehigh gray portland cement mixed with sand and a small quantity of yellow ochre color. Cornice, window sills, balusters and coping are of pre-cast concrete stone using Lehigh portland cement.

Six-Room French Cottage

Rufus A. Sherman, Architect
356 Milbank Road, Upper Darby, Pa.

Designed for Construction in Lehigh Portland
Cement Building Block and Stucco.



25,592 CUBIC FEET, INCLUDING CELLAR

Honorable
Mention



EXTERIOR OF PEARL GRAY COLORED STUCCO AND PALE BLUE TRIM

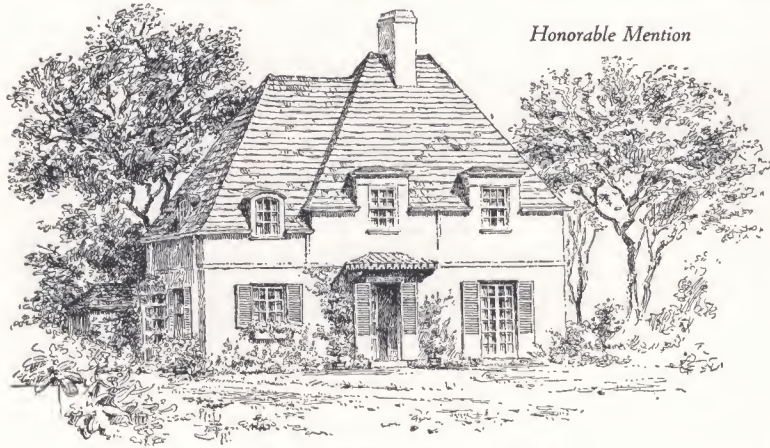
THE exterior of this interesting house is of Lehigh portland cement stucco in gray portland cement mixed with marble dust to give a pearl gray color and finished in the French Brush style as shown on page 29. The main entrance and platform are of moulded portland cement concrete, which is also used for the post-caps and copings at entrance wall and for garden walls. Sidewalks, steps and garden walks are formed of 4-inch concrete slabs, laid in design as shown in the plan. All window sills and lintels are of pre-cast concrete. The exterior woodwork is painted these colors: window frames and sash, pale blue; shutters, pale green; main entrance door, pale blue. The roof is of gray cement-asbestos shingles with chimney pots of salmon colored concrete.

Adaptation of the Directoire Period of France

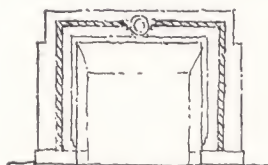
Six-Room Concrete Masonry House.

Wm. E. Willner, Architect, 401 W. 118th St., New York

Honorable Mention

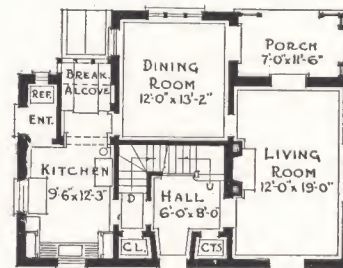
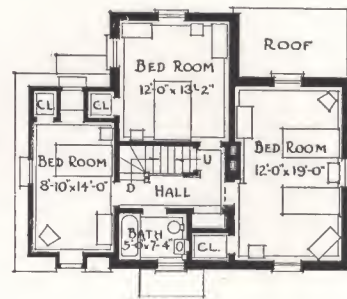


WARM BUFF STUCCO WITH WHITE TRIM



MANTEL DETAIL

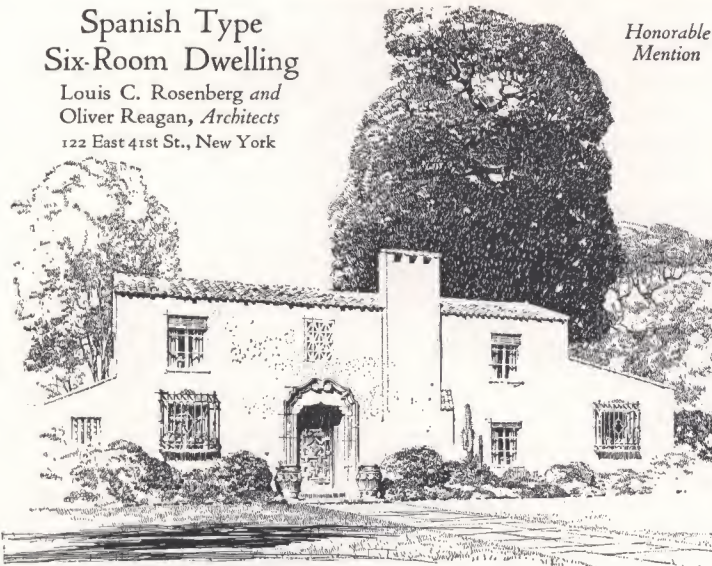
THIS house should be set on a level grass terrace, assuming that the surroundings will permit an intimate feeling in the street facade. The stucco should preferably be warm buff in color, finished in either the French Brush effect or the more common English Cottage manner (Nos. 10 and 3 on pages 29 and 28). The hood over the front entrance is of sheet iron painted in gray stripes after the French manner.



24,073 CUBIC FEET,
INCLUDING CELLAR

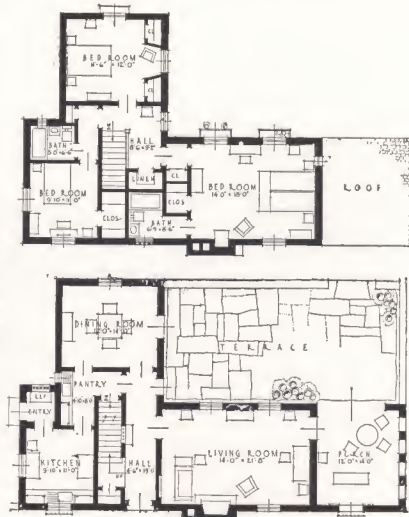
Spanish Type Six-Room Dwelling

Louis C. Rosenberg and
Oliver Reagan, Architects
122 East 41st St., New York



BUFF STUCCO WITH RED SPANISH CONCRETE TILE ROOF

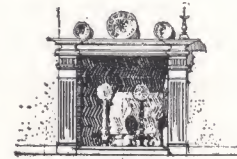
Honorable
Mention



25,927 CUBIC FEET

BY using pre-cast concrete sills and lintels and a Spanish concrete tile roof with no cornice, the amount of combustible material on this exterior is so reduced that there is no danger from communicated fire.

The stucco recommended is the Spanish type of finish No. 6 on page 28 in a warm shade of buff. Exterior woodwork is California redwood treated with linseed oil and left to weather. The concrete tile for the roof is to be of various light shades of brick-red, made by mixing red oxide of iron with Lehigh portland cement.

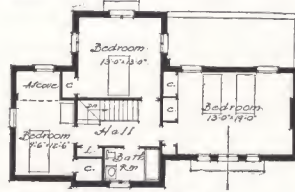
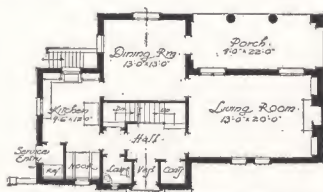


MANTEL DETAIL

Inspired by Attractive Farmhouses of Italy Six-Room Concrete Masonry Dwelling

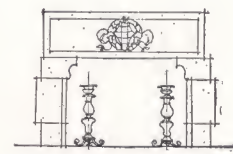
Honorable Mention

Amadeo Leone, Architect
800 Marquette Building, Detroit, Michigan



CONTAINS 25,830 CUBIC FEET, INCLUDING CELLAR

THIS charmingly simple dwelling is designed for construction in Lehigh portland cement concrete blocks and stucco. For the stucco the architect recommends the use of natural gray portland cement in a warm gray-buff color, with the troweled rough-cast surface of the Italian finish shown as No. 2 on page 28. Roofing tile are of handmade mission type, varying in shades from light yellow through russets and reds, and laid with irregular exposures and uneven lines at the eaves, producing an interesting shadow on the stucco wall. Fire-resistive construction throughout, as explained on page 23.



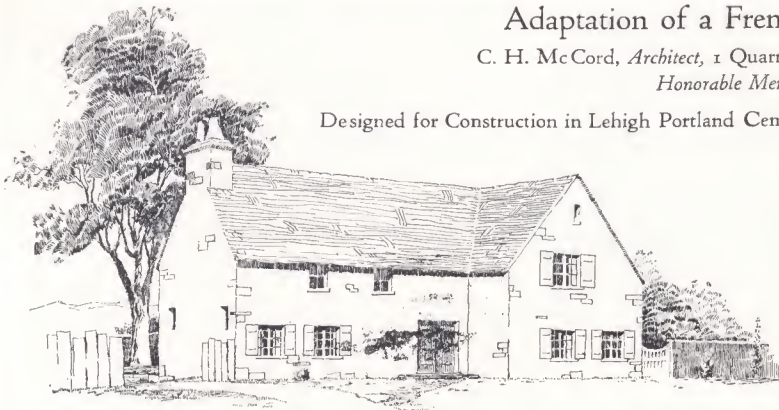
FIREPLACE DETAIL

Adaptation of a French Farmhouse

C. H. McCord, *Architect*, 1 Quarry Rd., San Rafael, Cal.

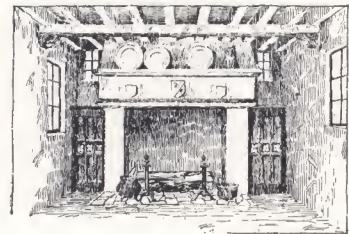
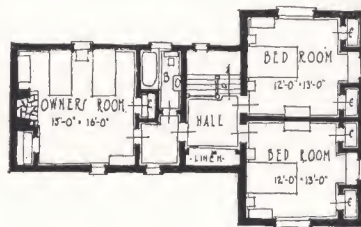
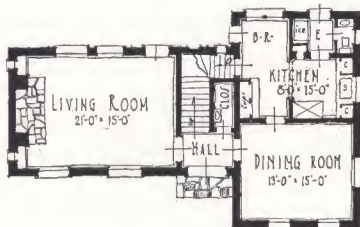
Honorable Mention

Designed for Construction in Lehigh Portland Cement Concrete Building Block and Stucco



STUCCO EXTERIOR WITH OCCASIONAL CONCRETE TILE EXPOSED

THE exterior finish is of the Gothic texture of stucco, No. 4 on page 28, and additional interest is provided by allowing the form of the concrete tile to show occasionally in the stucco surfaces. The entrance door is stained brown and varnished, the stain containing enough Prussian blue to give an old, bronzed effect. All sash and shutters are of wood painted a dull gray-blue in color. The roof is of irregular blue-gray concrete tile.



SIX-ROOM HOUSE CONTAINING 24,888 CUBIC FEET, INCLUDING CELLAR

INTERIOR OF LIVING ROOM

Six Rooms in English Farmhouse Style

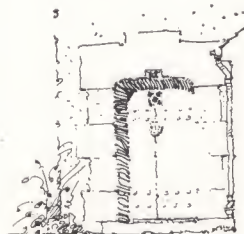
R. M. Eskil, *Architect*, 1602 "H" Street, Sacramento, Cal.

A TWO-TONED effect is provided for the exterior stucco of this house by putting on a ground coat of gray Lehigh portland cement tinted with yellow ochre and brown oxide of iron. Over this is brushed a coat of dull, deep brownish green made from gray portland cement tinted with yellow ochre and ultramarine blue. This brush coat is then wiped off, leaving depressions and deeper pockets of dark weathered color.

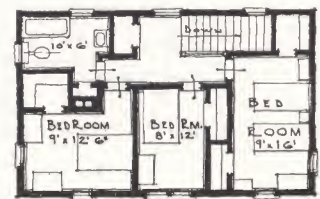
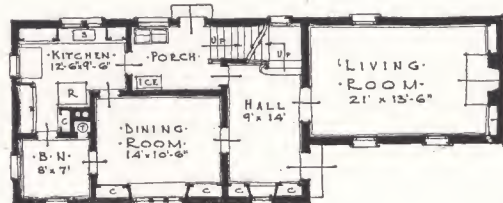


Honorable Mention

CONTAINS 25,300 CUBIC FEET



ENTRANCE DETAIL



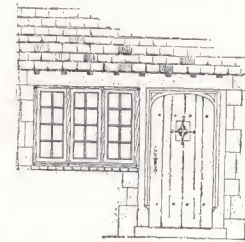
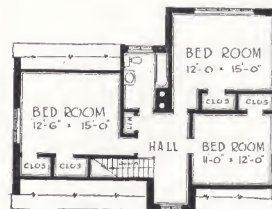
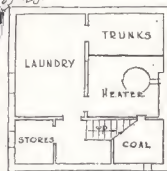


Six-Room English Cottage

Shirley C. Horsley, *Architect*
205 So. Juniper St., Philadelphia
Honorable Mention

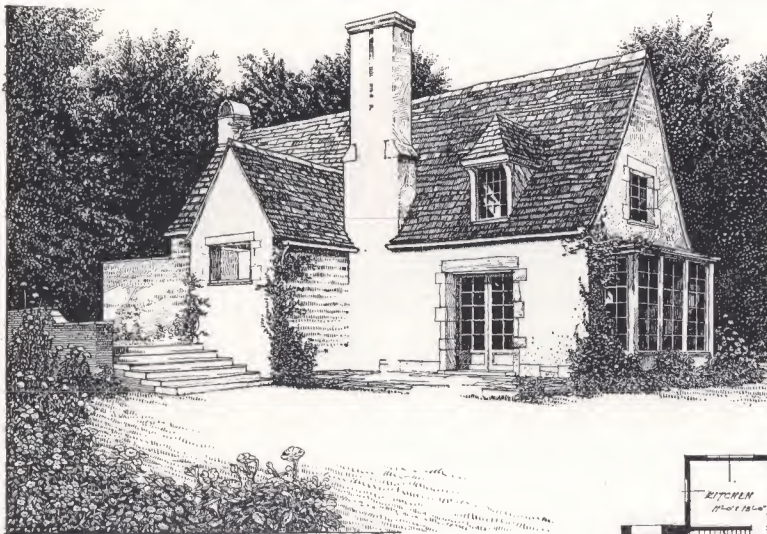
Designed for Construction in
Lehigh Portland Cement
Building Block and Stucco

THE exterior of this house is finished in stucco made of natural gray portland cement mixed with gravel. The quoins are pre-cast blocks of tinted concrete set flush with the finished stucco. Exterior woodwork is oiled, and sash are painted antique blue-green. Window sills are to be of red concrete brick, laid flat. The roof is of dark gray concrete shingles.



25,597 CUBIC FEET, INCLUDING CELLAR

ENTRANCE DETAIL

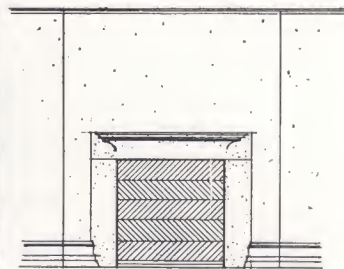


NATURAL GRAY LEHIGH PORTLAND CEMENT STUCCO

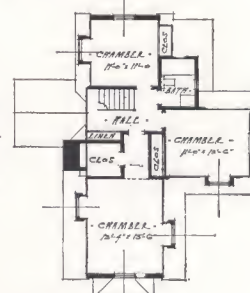
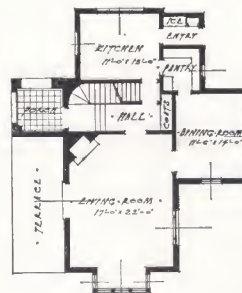
THE stucco used on this house is of a warm gray tone (natural gray portland cement) and in the standard French Trowel finish No. 11 on page 29. The roof is of concrete roofing tile mixed with pigments to give a slate effect. Windows are of standard casement type of steel sash having no outside or inside wood trim. Exterior woodwork and sash are painted a dull blue-green. The architect suggests use of wrought iron hardware wherever possible.

A Brittany Cottage

Charles Crombie, *Architect*
906 Marquette Building, Detroit, Mich.
Honorable Mention



FIREPLACE DETAIL

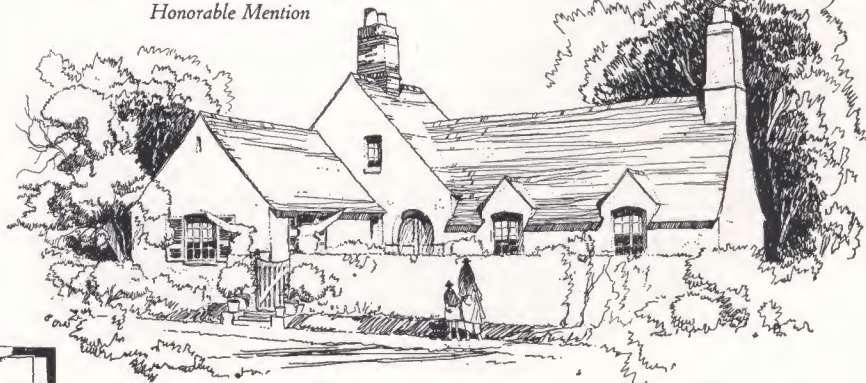


SIX-ROOM HOUSE CONTAINING 25,214 CUBIC FEET, INCLUDING AMPLE CELLAR

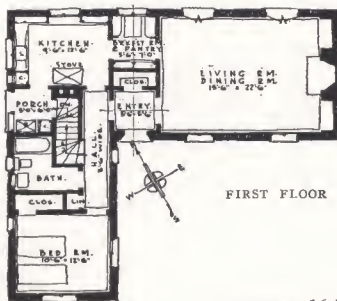
THIS is the companion drawing of the first prize house, shown on page 3, and these two drawings together won the Grand Prize in the Lehigh Portland Cement Home Competition. The exterior of this house is to be finished in the same manner specified for the first prize house, on page 3. The floors and bases in the living room, dining room and entry are to be of portland cement concrete tile in buff color, using 10-inch tile laid in regular diamond pattern.

The Picturesque Style of Normandy

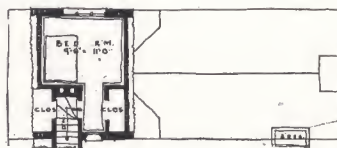
Angus McD. McSweeney, *Architect*
3245 Octavia Street, San Francisco, California
Honorable Mention



FIVE-ROOM BUNGALOW

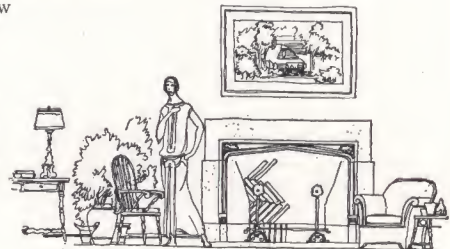


FIRST FLOOR



ROOM ON SECOND FLOOR

CONTAINS 16,526 CUBIC FEET, INCLUDING CELLAR

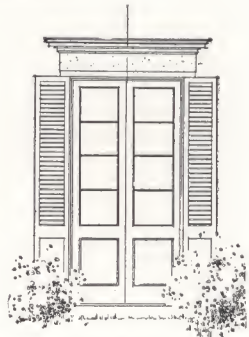


Five-Room Bungalow in the Style of Louis XVI

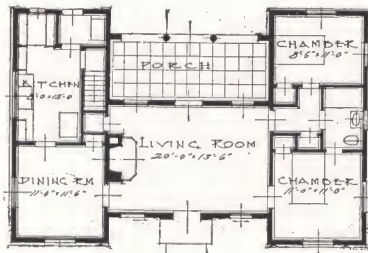
Wm. B. Millward, *Architect*, 1686 Forest Avenue, Portland, Maine
Honorable Mention—For Construction in Lehigh Portland Cement Concrete Block and Stucco



EXTERIOR OF YELLOWISH GRAY STUCCO WITH QUOINS ACCENTED IN METALLIC COLORS



EXTERIOR DETAIL



THE exterior of this building is to be covered with gray portland cement stucco having a small amount of yellow ochre mixed to produce a buff color, the quoins at corners and the trim around main entrance to be accented by the addition of a little metallic brown and blue. The texture of the stucco is the French Trowel finish No. 11 on page 29, while trim, quoins, etc., are Colonial finish No. 1 on page 28. The exterior doors and shutters are painted olive green. The roof is of flat concrete tile in random effect mixed with a mottled pink and green finish and graded to a thickness of 1 inch at the gutter. Precautions against fire include floors constructed of 2-inch concrete slabs on metal lumber and the use of Lehigh portland cement concrete block for all walls and also for the partitions.

CONTAINS 18,610 CUBIC FEET, INCLUDING AMPLE CELLAR

Five-Room English Type Bungalow

Honorable Mention

J. Pendlebury, *Architect*, c/o McKim, Mead & White, 101 Park Ave., New York

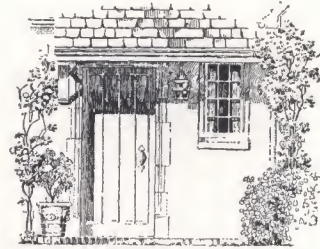
Designed for Construction
in Lehigh Portland Cement
Building Block and Stucco



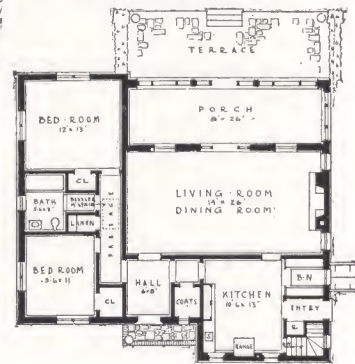
EXTERIOR OF NATURAL GRAY PORTLAND CEMENT STUCCO

SAFETY against fire is insured in the building of this house by the use of concrete block construction for walls and partitions, while the floors are of steel bar joist construction with 2-inch slabs of concrete supported by metal rib lath. The metal lath is used for ceilings throughout the house to prevent cracking or the spread of fire. Exterior walls are faced with stucco, made economically with Lehigh gray portland cement in its natural color and applied in three coats finished with English Cottage texture No. 3 on page 28. All exterior woodwork is stained in a dark, antique effect. Lintels and window sills are of pre-cast concrete. The roof is of metal and concrete construction, covered with tile of various sizes and variegated colors.

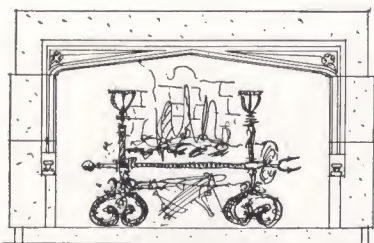
THIS BUNGALOW CONTAINS 19,522 CUBIC FEET, INCLUDING CELLAR



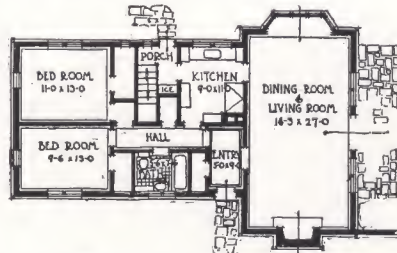
DETAIL OF ENTRANCE



EXTERIOR IN WARM BUFF STUCCO WITH BLUE-GREEN TRIM



FIREPLACE DETAIL



19,995 CUBIC FEET, INCLUDING CELLAR

Four-Room Cottage

Honorable Mention

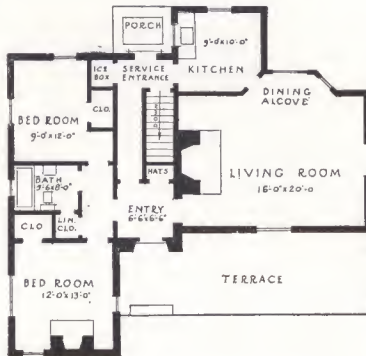
James D. Wickenden, *Architect*
2627 College Avenue, Berkeley, California

IN developing the plan for this house the architect has thrown the living room and dining room together to give one large room. The specifications cover design and construction: Exterior walls to be concrete blocks. Sash are to be of steel, and window mullions of cast concrete. Roof to be of concrete tile.

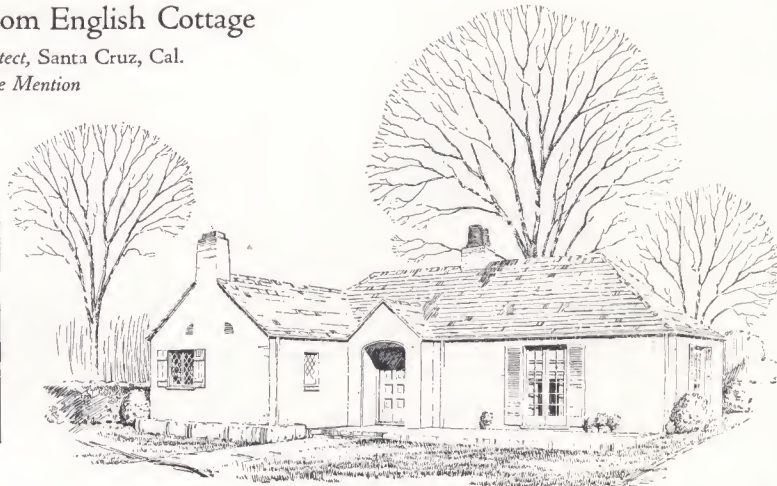
All interior plaster on metal lath. Furnace room partitions to be concrete blocks with a double metal lath ceiling and an air space between. Chimneys of concrete blocks with terra cotta flue linings. The exterior is designed with the utmost simplicity, the only ornament used being the simple mouldings around the entrance. A simple roof gives a look of home-like comfort and shelter, which is added to by the large chimneys which suggest a cheerful interior. The exterior stucco is to be a warm buff color, finished with the French Brush texture No. 10. Chimney tops to be faced with red brick, accenting the color scheme.

A Modern Five-Room English Cottage

Fred E. Pond, *Architect*, Santa Cruz, Cal.
Honorable Mention

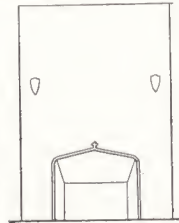


CONTAINS 19,050 CUBIC FEET



PINK TINTED STUCCO WITH GRAY AND MOSS GREEN ROOF

THE outside walls of this house are constructed of 6-inch portland cement concrete block, and the partitions are of 4-inch concrete block. The exterior finish is of warm stucco made with natural gray Lehigh portland cement tinted pink by the addition of Venetian red to the finishing coat. The texture of the stucco is modern American No. 5 on page 28. Cement-asbestos shingles are used for the roof in variegated grays and moss green. Exterior trim is painted blue-green. The chimneys are of portland cement concrete chimney block lined with terra cotta flue lining, and chimney pots are of cast concrete in reddish color. Inside walls are covered with lath and plaster, metal lath being used as base for the plaster to insure against cracking and the spread of flames.



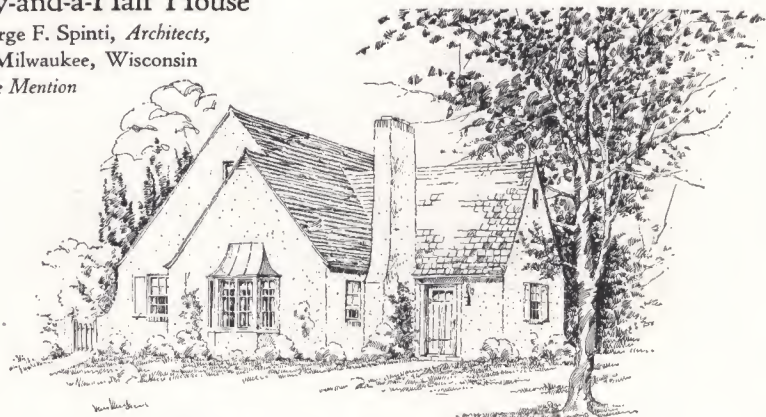
FIREPLACE DETAIL

A Devonshire Story-and-a-Half House

Sara Leenhouts and George F. Spinti, *Architects*,
424 Jefferson Street, Milwaukee, Wisconsin
Honorable Mention

THE house depicted in the accompanying drawing has all walls constructed of concrete blocks with reinforced pre-cast lintels over all openings. The cornice is to have a hanging gutter of sheet metal and a soffit of plaster on metal lath. The principal walls are carried through from the basement to the roof, thus providing economical, fire-safe construction. The exterior stucco has a first coat of natural gray Lehigh portland cement plaster, followed by a finished coat in which a small amount of yellow ochre has been mixed to provide a buff tone. The texture is to be the English finish shown as No. 7 on page 29.

All exterior woodwork is to be stained brown. The gutters and down spouts are to be of copper as well as the hood over the living room bay, which adds a touch of warm color. The same color is repeated in the metal of the lantern and door fittings.



FIVE-ROOM HOUSE CONTAINING 19,464 CUBIC FEET

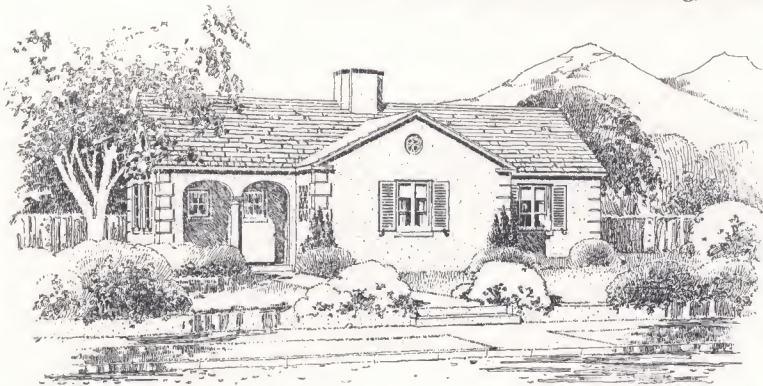


ENTRANCE DETAIL

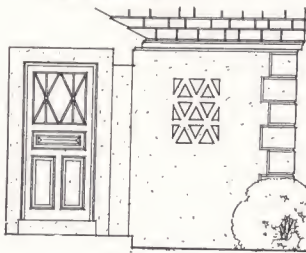


A Five-Room Cottage Showing Georgian Influence

Carl C. Tallman, *Architect*, Seward Building, Auburn, N. Y.



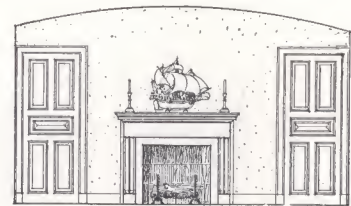
Honorable Mention



DETAIL OF ENTRANCE

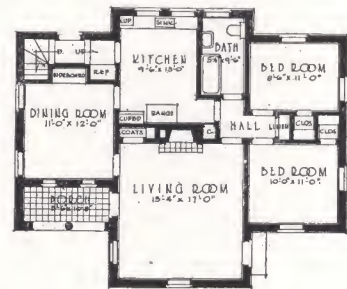
AN attractive exterior is provided by the use of warm buff stucco in the Italian texture No. 2 on page 28. The cast cement chimney cap is brick. The roof is of flat tapered cement-asbestos shingles in variegated colors. The exterior wood doors and shutters are painted blue-green, while windows and trim are cream color to tone with the stucco.

BUFF STUCCO WITH EXTERIOR TRIM PAINTED BLUE-GREEN



INTERIOR OF LIVING ROOM

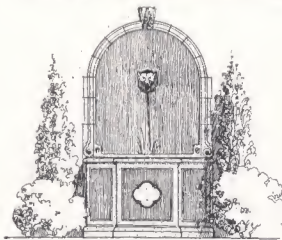
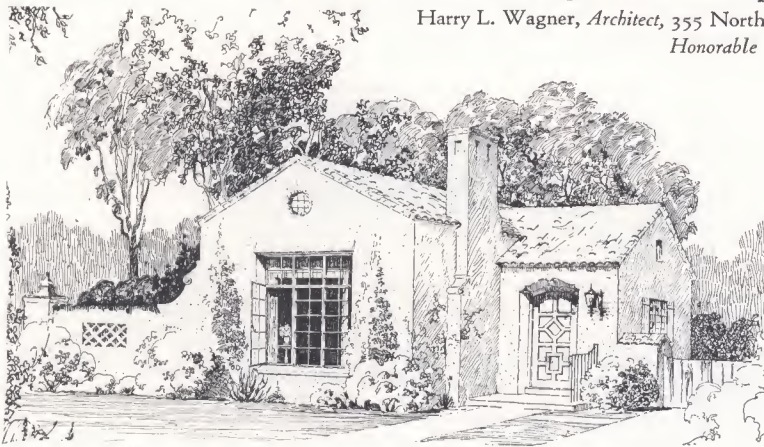
THIS HOUSE CONTAINS
19,934 CUBIC FEET,
INCLUDING CELLAR



A Five-Room Studio Bungalow in the Spanish Style

Harry L. Wagner, *Architect*, 355 North Lawn Avenue, Kansas City, Mo.

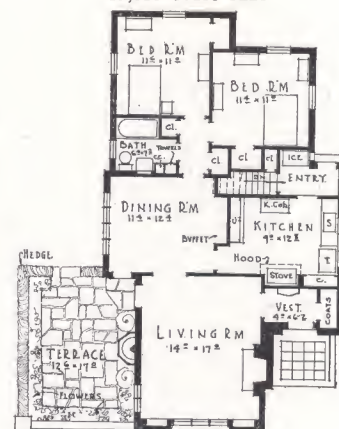
Honorable Mention



FOUNTAIN DETAIL

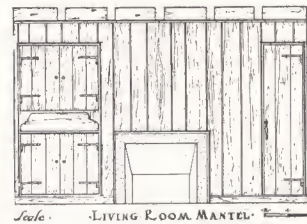
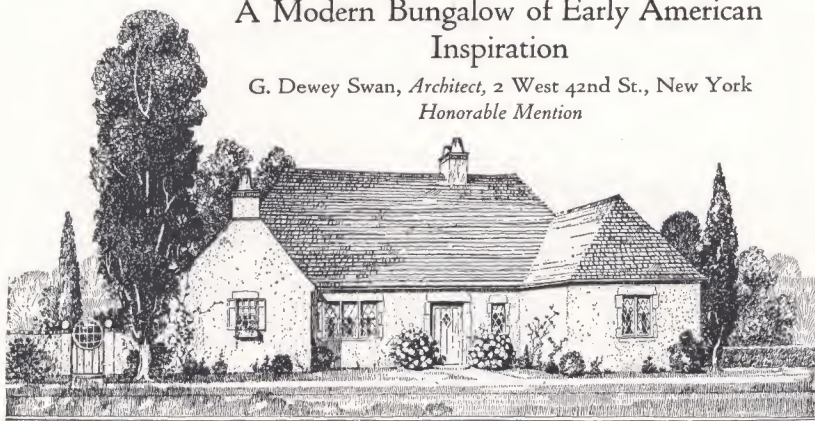
THIS attractive little studio is finished in natural gray portland cement stucco tinted to a warm yellowish shade and feathered with a wood float to give the Spanish effect No. 6 on page 28. The roofing is portland cement concrete Spanish tile in reddish colorings. Windows are of steel casement type throughout and painted to harmonize with the stucco coloring. The construction is entirely fire-safe, using Lehigh portland cement concrete block for walls and partitions. The floors are of light concrete slab construction. All ceilings are of plaster on metal lath, and interior walls are finished with Lehigh portland cement plaster. Fountain which is detailed at left is of concrete masonry.

CONTAINS
19,010 CUBIC FEET

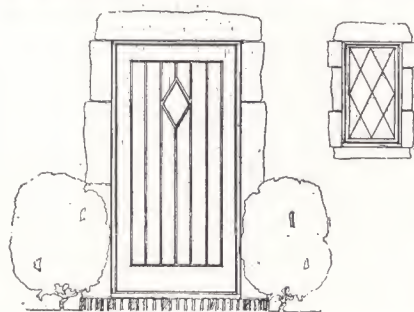


A Modern Bungalow of Early American Inspiration

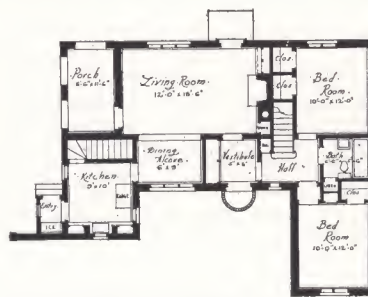
G. Dewey Swan, *Architect*, 2 West 42nd St., New York
Honorable Mention



INTERIOR WOOD PANELING



DETAIL OF ENTRANCE

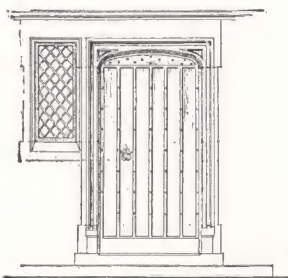


THIS FIVE-ROOM BUNGALOW CONTAINS 18,867 CUBIC FEET, INCLUDING CELLAR

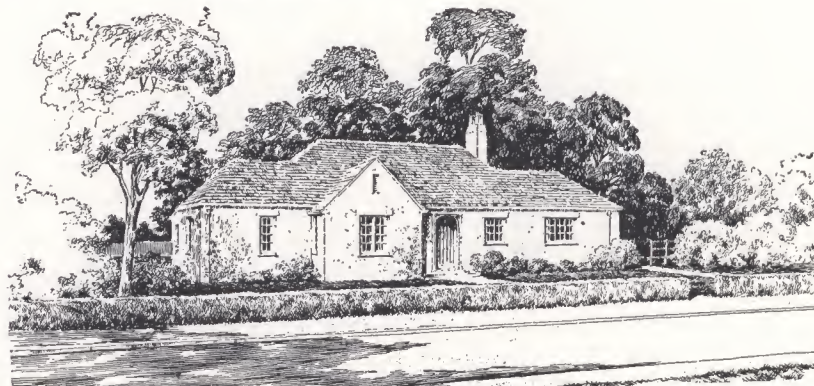
THE salient features of this exterior are the casement windows glazed with an occasional pane of cathedral glass; the mottled roofing tile of various shades of red and moss green, carefully blended; and the sand-colored portland cement stucco walls finished in the French Brush surface described as No. 10 on page 29. The exterior woodwork is stained light walnut and oiled. Gutters and leaders are lead-coated copper. The chimney pots are of concrete, shaped and antiqued with a coat of lampblack.

An American Adaptation of a Yorkshire Cottage

Wm. Rankin, *Architect*, 51 East 42nd St., New York
Honorable Mention



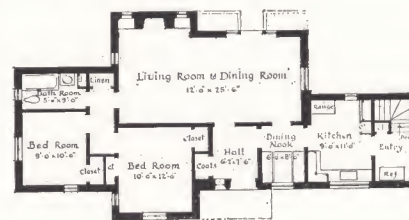
DETAIL OF ENTRANCE
DOOR IN WEATHERED OAK



THIS FIVE-ROOM COTTAGE CONTAINS 19,634 CUBIC FEET, INCLUDING CELLAR

THIS house is rendered fire-safe by the use of Lehigh portland cement concrete blocks for all walls and partitions. The cellar stairs are of concrete enclosed in 8-inch concrete building tile and having a metal-covered door. The boiler room is similarly enclosed. All ceilings are of metal lath and plaster, and the spaces between walls and plaster caused by furring, pipe chases, etc., are filled with concrete to the depth of the floor beams as fire stops.

The exterior walls are covered with Lehigh portland cement stucco of Gothic finish No. 4 (page 28) and colored light tan. The treatment around the exterior door and the living room mantel is of artificial stone made of cast concrete with special finished surface.



Safeguarding the Home Builder's Investment

IT is not the purpose of this book to burden the home builder's mind with a complexity of descriptive material, technical data or unnecessary advice. On the contrary, every effort has been made to achieve conciseness and to make every page of specific instructive value, presenting only practical information. Extensive observation of the ultimate results of many home building projects, particularly those which have brought dissatisfaction to the owners, suggests that this book would not be complete without the expression of a few thoughts and hints relative to the home building project from a businesslike, investment point of view. Home building is, after all a very businesslike proceeding and would always be considered on a cold-blooded investment basis were it not for the softening of intimacy developed by American family life and traditions. It is desirable, therefore, that the home builder should achieve a happy medium state of mind in considering this important investment. He should neither be too businesslike,—to the point of sacrificing comfort and attractiveness for economy,—nor should he be sufficiently unbusinesslike to allow waste either in the first investment or in the overhead cost of maintenance.

It is not necessary here to dwell upon the natural human interest in home building nor on the charm and satisfaction of achieving that ultimate desire which is inborn in most of us—the ownership of a pleasant home. From the business point of view, however, there are several important factors which may contribute greatly to the purse and pride of the home owner if he will but give these matters serious consideration and incorporate sound fundamentals in the carrying out of his project. We may pass over such items as the selection of real estate and the financing of home building, because these are primarily influenced by local conditions and methods, and because if a home owner in any part of the United States today is possessed of one-third or more of the necessary amount of money to buy land and build a house, he has little trouble in arranging mortgage financing through building loan associations or banks.

The first basic consideration should be a determination of the size of the house to be built, and by size we mean the amount of money to be spent. Home builders should realize that home owning does not mean freedom from paying rent. After acquiring a home the rent merely takes another form, which is the overhead cost and made up of interest, taxes, expense of heat and hot water supply, repairs and also depreciation and interest on the investment. These items should be carefully estimated in advance and a final budget sheet established showing, first, how much money must be invested, and, second, how much the monthly cost of owning that particular home would prove to be. Grief has come to many home builders because they have taken on more overhead expense than their individual incomes would justify.

There are five ways in which home builders often go wrong,—five conditions which may mean direct

pecuniary loss that can surely be prevented by foresight;

Building a house of poor architectural design.

Building a house of materials which require constant upkeep expense.

Building a house which is not safe against loss by fire communicated from the outside or spreading on the inside.

Building a house with cheap materials and equipment which rapidly depreciate and necessitate expensive repairs and replacements.

Building a house of such a peculiar plan that it is not readily marketable in case it is ultimately offered for sale.

To insure good architectural design, home builders are strongly advised to make use of architects' services and to attempt no home building project without sound professional advice. At a preliminary stage, it is well to study good house plans and to determine approximately the kind of exterior and the kind of plan most desirable from the individual point of view. As suggestions along this line there are presented in this book a number of interesting designs which will undoubtedly offer many suggestions.

To avoid costly upkeep, the use of concrete masonry construction, as described on page 23 of this book, is strongly advised. This system of building, under which exterior walls and partitions are of portland cement concrete building block with exteriors of stucco, not only reduces maintenance cost to a minimum but affords structural insurance against fire loss and involves an annual depreciation so small that it can be disregarded. The exterior of the house may be built entirely of portland cement products as explained on page 23. Walls of stucco; sills and lintels of concrete; roof of portland cement tile or cement asbestos shingles; chimney of concrete chimney blocks,—all these constitute the fire-safe envelope for the house and absolutely eliminate the conflagration hazard. Interior construction will include concrete floors, concrete block partitions, concrete fire stopping and portland cement plaster with metal lath applied at hazardous points, such as the ceiling of the boiler room and around the hearths. Thus the spread of fire originating inside may be restricted at danger points.

The folly of using cheap materials and cheap equipment is so evident that it needs little discussion except to express amazement that so many home builders are foolish enough to think they are conserving on the investment by achieving cheapness.

While the use of concrete masonry construction will in a practical manner meet every common sense requirement of home building, it must be remembered also that relative to this system of building there is one vitally important consideration,—the home builder must know that the portland cement used for concrete and stucco in his house is *good* portland cement. If the portland cement is not good the stucco and building units made from it cannot be good. To use Lehigh portland cement is the home builder's absolute guarantee of quality and dependability.

Sixty Safeguards for the Home Builder

If you will give serious attention to the following 60 practical points when building your home, you will avoid much later disappointment and expense and protect your investment in a businesslike manner.

General Precautions

1. Carefully estimate carrying charges—determine monthly cost—do not build a house larger than you can afford to carry.
2. Study neighborhood trends and restrictions before buying your lot.
3. Locate house carefully on your lot to get best appearance—follow your architect's advice.
4. Be sure house is not set too high or too low above grade line—this may spoil its appearance—your architect will help you decide correctly.
5. Use every structural safeguard against loss by fire.
6. Protect against depreciation by building with good masonry materials (See page 23).
7. Prevent high maintenance cost by using stucco exterior (See page 27).
8. Employ a good architect—a well designed and properly planned house has greater real estate value.
9. Employ a dependable building contractor—good construction is economical.
10. Remember that a house of concrete masonry construction has the highest real estate appraisal value.

Exterior Design

11. Must fit natural environment—look before you leap—get the architect's advice.
12. Remember that beauty lies in simplicity—ugliness is usually complex.
13. An attractive exterior results from the proper combination of color and texture—portland cement stucco is an exterior finishing material in which these important elements can be completely and economically controlled (See page 27).
14. Architectural details can make or break an exterior design.
15. Proper planting is an inexpensive method of accentuating attractiveness and increasing home values.

Planning Your Home

16. Have a good architect prepare complete plans.
17. Be sure you understand them—lay out room sizes if you cannot visualize from plans.
18. Avoid "tricky" plans—you may have to sell the house some day.
19. Two bathrooms are more convenient than one, and a great rental or sales asset.
20. Permit no waste cellar space—cellars can be ample without being large.
21. Be sure to have enough closet room—you cannot build closets later.
22. Study the plans for eliminating waste space—make sure that every foot is used for some good purpose.
23. Study the plans for housekeeping convenience—the shortest distance between two points is the golden rule for housekeeping.
24. Provide a delivery entrance—probably an entry off the kitchen where ice box can be located.
25. Have fireplace and chimney flues large enough for real service.
26. Plan cellar carefully—there is a proper location for each division.

Specifications

27. Be sure these are definite—misunderstandings with contractors are always expensive.
28. Be sure specifications are complete—avoid extras—don't change your mind after the job is started.
29. Specifications should call for good standard materials made by manufacturers of good reputation. Do not use cheap or unproven building products.
30. Specify Lehigh Portland Cement for all concrete and stucco work—it is dependable.

Equipment

31. Put in more electric outlets than you think you will need.
32. Select good lighting fixtures—poor designs may spoil a room.
33. Place lighting fixtures carefully for both appearance and service—put a light in every closet.
34. Provide outlets for electric refrigerating, laundry and kitchen equipment—you will ultimately use them.
35. Bathroom and kitchen get the hardest use of any part of the house—put in good fixtures and good masonry floors and walls.
36. Select heating apparatus with care—clean handling, clean heat and automatic control and ample radiation will be appreciated.
37. Ample, dependable hot water supply is a great comfort.

Construction

38. Don't give verbal orders to change plans or specifications on the job—these will be expensive extras—if you do change your mind, change it in writing at an agreed price with the contractor.
39. A chain is only as strong as its weakest link—avoid cheapness.
40. Insist on good concrete masonry foundations—drain around them if the land is wet.
41. Walls and partitions of good concrete masonry are lasting and fire-safe.
42. Visit local concrete block manufacturer—be sure the concrete blocks are manufactured under proper standards. (See page 23).
43. Roofs must be selected for good color, permanence and fire-retardant qualities—40 per cent of the burned homes of America are destroyed by fire from the outside.
44. Exterior metal work, gutters, leaders and flashings should be copper or zinc—avoid repainting and rust.
45. Prevent cracking of plaster walls by judicious use of metal lath—your architect will tell you how.
46. Watch the portland cement that comes on the job—insist on Lehigh—it is dependable.
47. Make final decision on stucco color and texture from samples actually made on the job—insist that the builder do this.
48. Pay an architect to supervise the construction—that is his business—he will save much more than his fee.
49. Select windows with care—be sure they do not interfere with easy operation of shades and screens.
50. Be sure window openings are properly water and wind proof.
51. Select simple, efficient window hardware particularly for casement windows.
52. Remember you will need good window shades and rust proof screens.
53. Insist on good flooring—it costs much less in the long run and pays dividends of beauty and economical upkeep.
54. Kitchen floors should be proofed against water and staining—Lehigh Portland Cement painted or covered with linoleum is the most practical.
55. The most economical and practical porch floors are colored portland cement laid off in tile effects.
56. Chimneys of concrete block and clay flue linings are the best. (See page 25).
57. Use only good paint and varnish—cheapness here means constant renewal at great expense.
58. Plumbing systems are important—eliminate repair bills by the use of brass piping at least for hot water system.
59. Do not select anything simply because it is cheap. There is no place where quality pays greater dividends than in the construction and equipment of your home.
60. You can safeguard against all structural deficiencies by the use of Lehigh Portland Cement home building products as described on pages 23 to 30 of this book.

You can familiarize yourself with plan reading and symbols used by architects and builders by turning to page 32.

The descriptions accompanying each of the homes illustrated on the pages preceding are taken from outlined specifications submitted by the architects.

Lehigh Concrete Masonry Construction for Homebuilding

A Practical, Non-Technical Explanation of the Methods of Building Economical, Permanent, Fire-safe Homes Using Portland Cement Throughout

The term, "concrete masonry," or as it might well be called, Portland Cement Masonry, as applied to the residential field, means that the structural units employed for building up walls and partitions are standard hollow concrete block or tile made with portland cement, and that the exterior surfacing of the house is portland cement stucco in color and texture as selected. Hollow concrete block and concrete building tile of the self-surfacing type are also often used, requiring no stucco or other veneer.

The use of this type of construction in the field of homebuilding has long since passed the experimental stage, owing primarily to the development by the American Concrete Institute of definite standards for the manufacture of concrete block, concrete building tile and other units of pre-cast portland cement concrete. This building material is today available everywhere, through thousands of factories and building material dealers who produce and distribute guaranteed concrete masonry units manufactured from Lehigh Portland Cement under the established standards. Close to one-half billion concrete block and concrete building tile are being used this year for the permanent, fire-safe construction of homes!

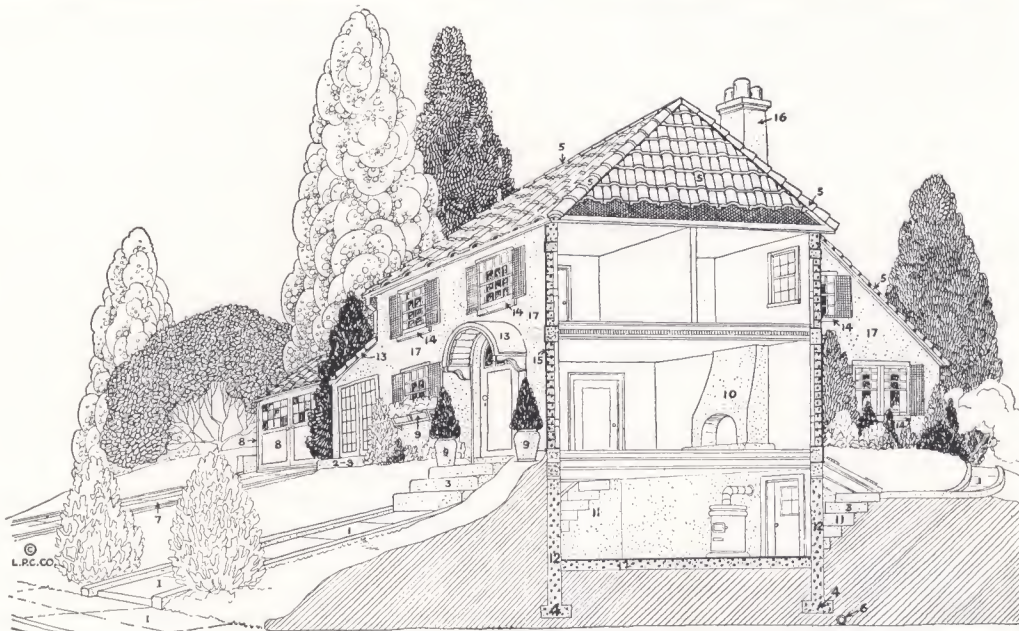
The advantages indicated by the use of this method of residential construction tend to simplify the work of the designer and the builder. The dimensions of various units allow flexibility of design and ease of construction. Concrete block or tile lay up rapidly, bed firmly and quickly, and provide receptive surfaces to which mortar and portland cement stucco adhere with monolithic tenacity.

From the viewpoint of the home owner this construction represents economy in the first investment; low depreciation; and the elimination of maintenance costs. The important factor of safety against destruction by fire is provided, and the rapid passage of heat or cold through the walls is defeated by the liberal provision of proper air spaces.

Concrete Block and Concrete Building Tile

The principal standard types of this building material include:

1. *Hollow Block*, which have cells or air spaces running through the unit, as shown in Figures 2 and 3 on page 24.
2. *Two-Piece Block*, which provide a continuous air space in the wall, as shown in Figure 4.



WHERE LEHIGH PORTLAND CEMENT SHOULD BE USED IN BUILDING A CONCRETE MASONRY HOME

- | | | |
|--------------------------|-----------------------------------|--------------------------------|
| 1. Concrete walks | 7. Concrete driveway | 13. Concrete porch roof |
| 2. Concrete porch floors | 8. Concrete garage | 14. Concrete lintels and sills |
| 3. Concrete steps | 9. Concrete urns and flower boxes | 15. Concrete block walls |
| 4. Concrete footings | 10. Concrete fireplace | 16. Concrete chimney and cap |
| 5. Concrete roof tile | 11. Concrete stairways | 17. Portland cement stucco |
| 6. Concrete drain tile | 12. Concrete foundation | |

3. *Concrete Building Tile*, which are usually smaller in size and lighter in weight than concrete block.

The most commonly used size, the "normal size," of concrete building block is 8 x 8 x 16 inches, making a wall 8 inches thick and courses 8 inches high. Block are also made regularly for walls 10 or 12 inches thick and courses 6 to 12 inches high. Lengths are from 16 to 30 inches. Partition block are made 4 and 6 inches thick and in the usual dimensions.

Bearing Partitions in Basement

In order to safeguard against any movement which will result in plaster cracks and the shifting of trim, doors, or windows, due to settlement, it is recommended that basement partitions of concrete block or

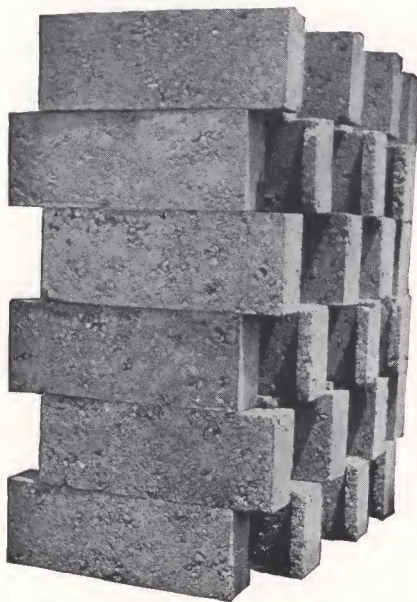


Figure 2. Concrete block with rough textured surfaces provide a backing to which portland cement stucco clings tenaciously

tile be used to carry the weight of floors and interior partitions. This system is decidedly preferable to that of beams and columns, and affords at once a rigid support for the structure with fire-resistive enclosures for the heating plant, storage and other basement facilities which involve a fire hazard.

Setting Door and Window Frames

One of the important economies of concrete masonry construction is the availability of standard door and window jamb block and tile as illustrated in Figure 7. These are supplied to fit plank and box frames of all common designs and make possible tight connections which exclude wind and water. Frames for exterior openings are usually built into the wall as it is constructed and are well bedded and pointed in mortar, an added safeguard being caulking with oakum before pointing.

Pre-cast Concrete Lintels and Sills

Except over very wide spans, pre-cast lintels are convenient and economical. These concrete lintels are made the same height as block courses and in multiples of block lengths. Where openings are wider than 3 feet, reinforcing bars are used.

Similar to the lintels described here, window sills are usually pre-cast in concrete, as shown in Figure 6, and set in at the time the wall is built. Window sills are usually 4 inches thick, and are placed on top of a course of block.

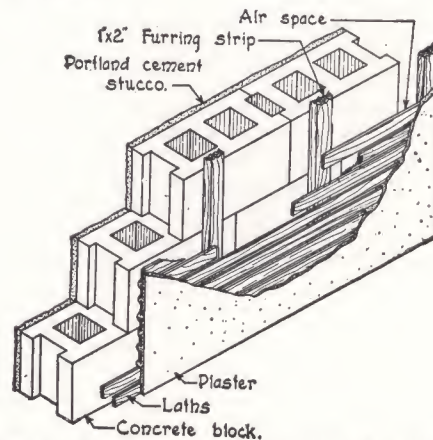


Figure 3. Detail Showing construction of a wall of Lehigh portland cement stucco on concrete block

Pre-cast lintels and sills can be given any type of decorative finish desired by using facing aggregate in a thin layer of concrete next to the outside face and scrubbing or tooling after the forms are removed. For stucco houses it is usually found desirable to apply stucco over rough-cast sills and lintels.

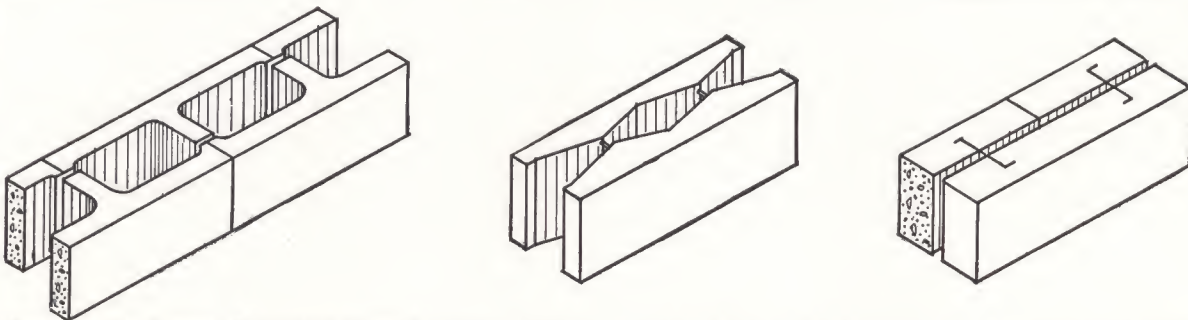


Figure 4. Various types of two-piece portland cement concrete block designed to provide a continuous air space in exterior walls

Chimneys and Fireplaces

The construction of chimneys is greatly simplified and expedited by the use of standard concrete chimney block. Such block, built up on solid concrete footings, are set damp in cement mortar of 1:2 proportions and develop a strong bond with tight joints. Added fire protection is gained by using flue lining, breaking joints with the chimney block.

The use of portland cement concrete in brick, block, tile or stucco form for the building and finishing of fireplaces offers such a wide variety of colors, textures and patterns that this subject can well be left to the constructive imagination of the architect and the home builder. It is a sweeping but true statement that any desired fireplace design can be executed in concrete products.

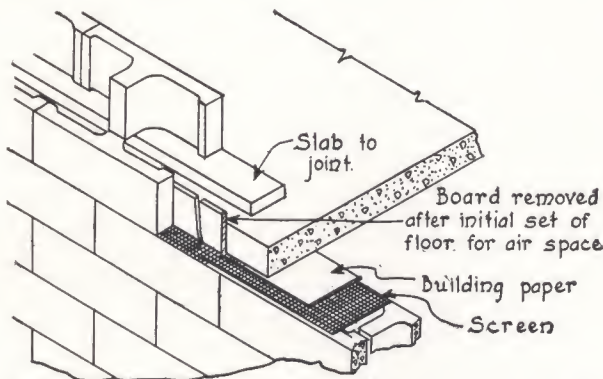


Figure 5. Method of supporting concrete floor on two-piece wall

Supporting Wood or Concrete Floors

Another factor of economy and convenience provided by concrete masonry construction is the provision of special joint block affording rigid seating for wood floor joists. These block are of the same shape and build in as normal block except for the notches cast in to accommodate the joist ends. Another method is to use veneer block on the outside of the wall and corresponding block inside shortened to accommodate the joist ends.

In this manner a "fire cut" is provided on the end of the joists as is often demanded by insurance underwriters. Where wood floors are used it is always advisable to provide a ceiling of cement plaster on metal lath over rooms where heaters, boilers or other



Figure 6. Pre-cast sill in position in wall of concrete masonry construction

fire hazards are located. This adds materially to the fire safety of the building and often results in lower insurance rates.

A popular method of supporting concrete floors is illustrated in Figure 5. The floor rests on the inner half of the horizontal wall section, block being placed on the outer edge, leaving a small continuous air-space.

Furring and Lathing for Concrete Masonry Construction

A continuous air-space behind plaster usually affords sufficient insulation to keep the plaster at a temperature uniform with that of the room, thus preventing condensation. Similar to good practice for all masonry construction, where concrete block are used the wall is "furred out" before plaster is applied. In severe climates this should be done even where the "two-piece" block is used to provide a continuous air-space within the wall.

Special nails and screws are available for attaching wood furring strips to the block, or a practice often followed is to lay lath in the mortar joint flush with the inside wall surface to provide a nailing base. Furring need be attached only every three or four courses in height.

Attention is directed also to various prepared insulating materials, such as sheet cork, asbestos, flax fibre or dried seaweed bases, on many of which the plaster may be applied direct without the use of lath. These special linings are growing in favor because they build up easily and quickly and afford a number of desirable qualities from the home builder's viewpoint.

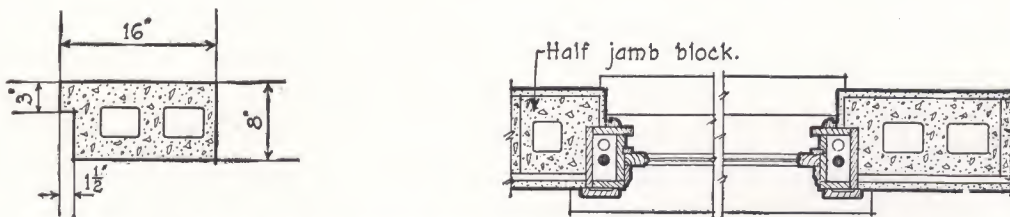


Figure 7. Special door and window jamb block cast in Lehigh Portland Cement concrete

Good Practice in Concrete Masonry Construction

Figure 8 offers a complete and interesting illustration of the details of concrete masonry building as it is applied to residential construction. A careful examination of this wall section will indicate the practical application and inter-relation of the various structural details already described. It is obvious that such sound practical construction provides that happy combination of rigidity, fire-resistiveness and low maintenance costs so desirable from the viewpoint of the home owner.

It will be noted that for practically every structural requirement of a permanent, fire-resistant dwelling there is a Lehigh portland cement product formed either by pre-casting or by mixing on the site.

How and Where to Obtain Lehigh Portland Cement Building Products

The Lehigh Portland Cement Company is the world's largest producer of dependable portland cement. This material is supplied to thousands of building contractors and manufacturers of concrete building blocks, tile and other portland cement products. From the home builder's viewpoint insistence upon the use of good concrete masonry construction for the new dwelling is a simple means of insuring economy, safety against fire loss and low depreciation and maintenance costs. If good portland cement is used under the correct standards of manufacturing concrete building units, the results will be more than satisfactory to the home builder. Lehigh portland cement is the standard of dependability. You will find in your neighborhood reliable building material dealers who sell this nationally known product. You will find that any concrete block manufacturer who uses Lehigh portland cement can usually be relied upon to furnish quality products.

The first step on the part of the home builder is to tell his architect that he wishes his house designed in concrete masonry construction, specifying Lehigh portland cement. Your architect is familiar with this method of construction and with the high reputation of this cement. Similarly in making arrangements with a building contractor, the home builder need only insist on concrete masonry construction calling for the use of Lehigh portland cement. Visit a local building material dealer who handles Lehigh portland cement. He will advise you where to find a dependable contractor and a manufacturer of good concrete building products; or write to the Lehigh Portland Cement Company, Allentown, Penna., or Chicago, Ill., to recommend a local dealer who handles this material.

The specification which calls for the construction of your home in Lehigh portland cement concrete masonry construction is your insurance of permanent satisfaction and the protection of your home investment from a business point of view.

A complete list of the district offices of the Lehigh Portland Cement Company will be found on the inside back cover.

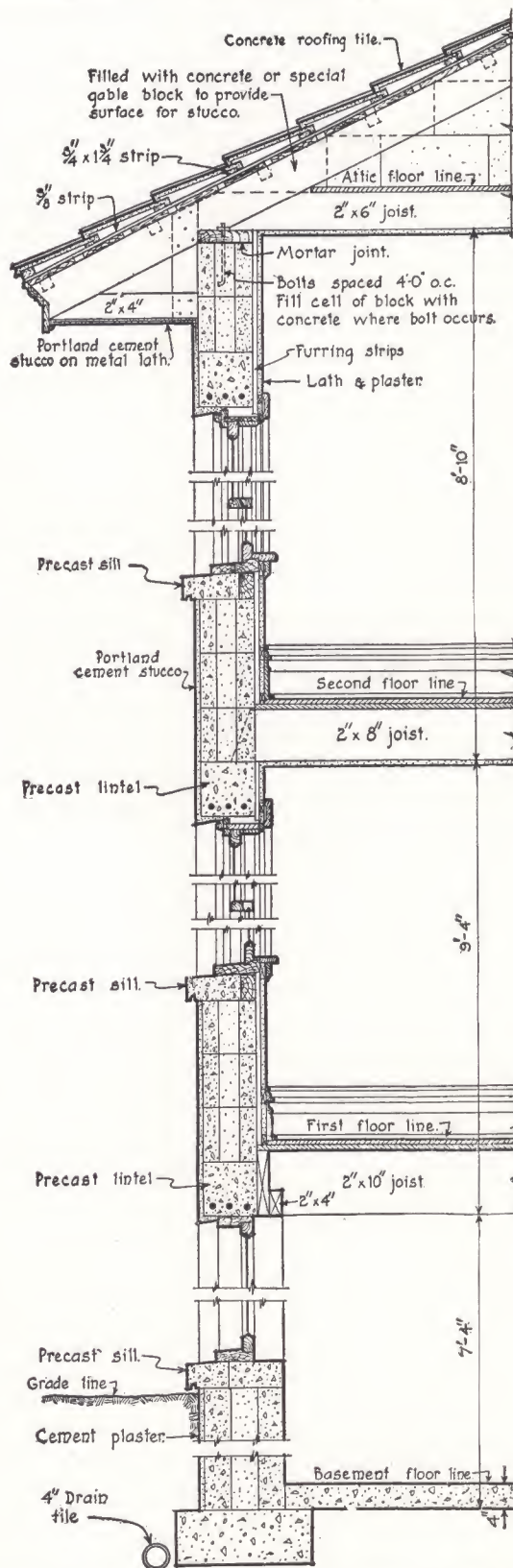


Figure 8. Wall section in concrete masonry showing good practice in the use of Lehigh portland cement concrete products

Portland Cement Stucco Exteriors For Dwellings

The Correct Application of Portland Cement Stucco—With Notes
On Textures and Colors Using Natural Gray Lehigh Portland Cement

EXTERIOR walls of concrete block or concrete building tile constitute an unusually good type of construction for the application of portland cement stucco finishes in residential building. The reasons for this structural condition may be found first in the rigidity of the concrete masonry wall, and second in the certainty of obtaining the strongest kind of a bond, due to rough surfaces and the homogeneous nature of the materials employed. The concrete masonry wall of stucco on concrete block or tile is practically monolithic and proof against cracking either because of settlement in the building or temperature changes, the latter because the coefficient of expansion in both wall and surfacing is the same.

There are three important factors to be considered in the development of stucco exteriors. The first is the mixing and application of the portland cement stucco; the second is the obtaining of artistic textures; and the third, the interesting possibilities of coloring stucco to obtain the best architectural effects.

It may be noted here that definite cost saving is offered through the practical possibility of coloring natural gray portland cement. Practically every desirable stucco color, except white, may be had in this manner—mixing the pigments with the gray cement in experimental batches until the proper color is developed. Where light shades are required, white marble dust may be mixed in to lighten the gray of the base material, and producing in this manner practically the entire line of lighter tints in stucco. Detailed information as to the coloring of stucco will be found in later paragraphs, but it is well to stress here the practical economy afforded by the coloring of gray Lehigh portland cement.

The broad general use of portland cement stucco for residential exteriors has familiarized practically all home owners with the valuable qualities of this material. Attention is directed, however, to several important points in the designing and construction



PORTLAND CEMENT STUCCO ON CONCRETE BLOCK

The perfect bond obtained between stucco and base makes concrete block an ideal backing for stucco. Where the wall has been laid up with few irregularities two-coat work may be used, as shown here, providing the first coat is doubled. In all other cases three-coat work is recommended.

of stucco dwellings. Stuccoed copings, cornices and other exposed horizontal surfaces should be avoided wherever possible. All exposed stucco surfaces should shed water quickly, and whenever departure from the vertical is necessary, as at water tables and belt courses, the greatest possible slope should be detailed. Whenever projecting wood trim occurs on the exterior, suitable flashing should be provided. Wall copings, cornice rails, chimney tops, etc., should be built of concrete, as explained on these various pages. Cornices set with mortar joints should be provided with flashing over the top, and continuous flashing should extend across the wall below copings, projecting beyond to form an inconspicuous lip over the upper edge of the stucco. Sills should project well from the face

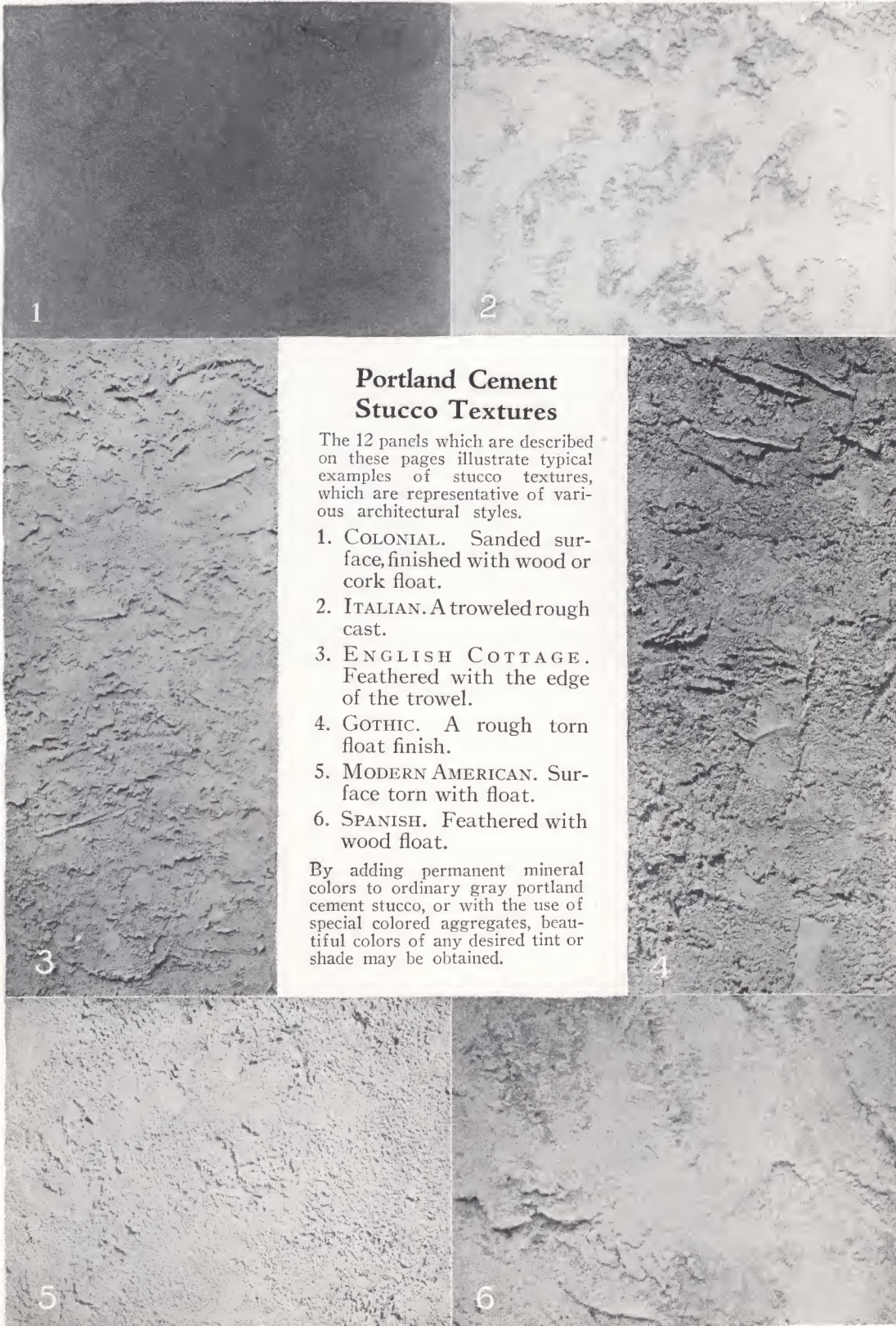
of the stucco and be provided with drip grooves or flashing, and with stools or jamb seats to insure wash of water over the face and not over the ends. In other words, the fundamental rule in the design of a stucco structure is to keep water from getting behind the stucco. For this reason a careful study of methods of avoiding leaks and drips and providing proper roof drainage will well repay the time spent by your architect and insure lasting stucco construction.

Textured Finishes in Portland Cement Stucco

On the following two pages the home builder will find 12 very carefully developed standard stucco textures for various architectural types of houses. Each plan in this book carries the architect's choice of one of these finishes for the exterior of the house designed for the Lehigh Portland Cement Home Competition.

Materials used with Lehigh Portland Cement for making stucco should be carefully selected. Fine aggregates should consist of sand or screenings from crushed stone or crushed pebbles, graded from fine to coarse, to pass through a No. 8 screen when dried. Fine aggregates will preferably be of siliceous mate-

(Continued on page 30)



Portland Cement Stucco Textures

The 12 panels which are described on these pages illustrate typical examples of stucco textures, which are representative of various architectural styles.

1. COLONIAL. Sanded surface, finished with wood or cork float.
2. ITALIAN. A troweled rough cast.
3. ENGLISH COTTAGE. Feathered with the edge of the trowel.
4. GOTHIC. A rough torn float finish.
5. MODERN AMERICAN. Surface torn with float.
6. SPANISH. Feathered with wood float.

By adding permanent mineral colors to ordinary gray portland cement stucco, or with the use of special colored aggregates, beautiful colors of any desired tint or shade may be obtained.



7



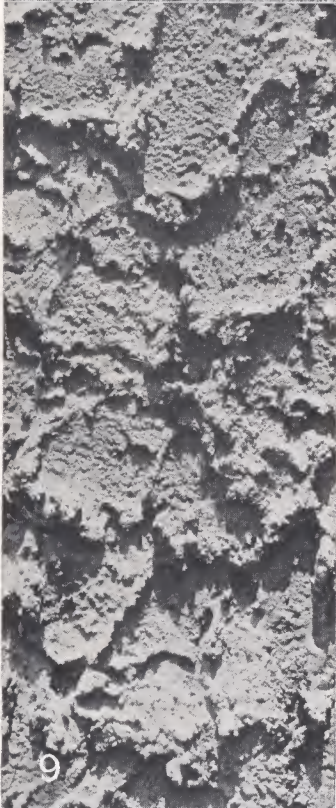
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Widest Choice of Artistic Effects

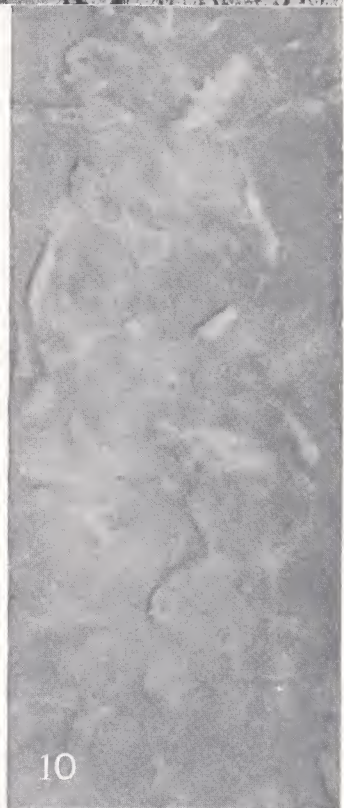
These textures may be varied to suit individual preference, and if so desired, distinctly different surface finishes may be obtained.

7. ENGLISH. Spotted by a side stroke of trowel.
8. ITALIAN COTTAGE. A sponge finish on a soft plastic surface.
9. GREEK. A trowel dash or float spotted finish.
10. FRENCH BRUSH. Uneven sand surface effect, obtained by hand rubbing.
11. FRENCH TROWEL. Finished with a sweep stroke of trowel.
12. CALIFORNIA. A carpet-floated rough cast.

Portland cement stucco blends harmoniously with every style of architecture; it affords unlimited opportunities in color composition; it permits of an endless flexibility of surface treatment.



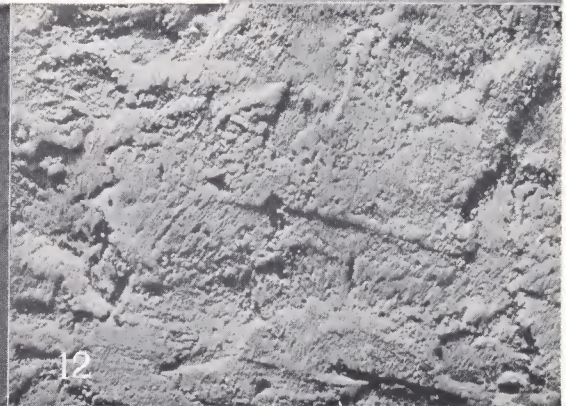
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10



11



12

(Continued from page 27)

rials, clean, coarse and free from loam and other deleterious matter. Care should be taken to specify hydrated lime, instead of lump lime, for the reason that lime which is slaked on the site cannot be so thoroughly hydrated and mixed in the mortar as the mechanically hydrated product. Hair or fibre should be free from foreign matter and of first quality long. Water should be clean, free from oil, acid, strong alkali or vegetable matter, and only mineral colors should be used, as explained in later paragraphs.

Concrete block for stucco walls should be rough and of coarse texture, but not weak or friable. Block should be set as is explained in these pages; the surface should be brushed free from all dirt and loose particles before applying stucco and wetted to a degree where water will not be easily absorbed.

The stucco should be applied in two or preferably three coats. All coats should be of the same mix, and the first coat should thoroughly cover the base on which it is applied, and be well troweled to insure the best bond. Before the coat has set, it should be heavily cross-scratched to provide a strong mechanical key. The second coat should be applied on the day following the application of the first or scratch coat, dampening that coat, if necessary. It should be brought to a true and even surface by screeding at intervals not exceeding 5 feet and by constant use of a straightening rod. After the second coat has stiffened sufficiently, it should be dryfloated and lightly cross-scratched to receive the finish coat.

The finish coat should be applied not less than a week after the application of the second, and may consist of any of the various textured surfaces which are here described, or special textures which may be developed under the direction of the architect.

Colored Stucco Made from Gray Portland Cement

Architects, builders and owners are finding of particular interest the fact that ordinary gray portland cement may be colored to provide practically any desired stucco finish. The economy of this procedure is obvious, representing not only saving of money but the convenience of using the portland cement which is all ready on the site. The use of pigments with

gray portland cement involves the usual standard practice in the coloring of stucco.

Only mineral pigments should be used, as other pigments are liable to fade as well as reduce the strength of the stucco, mortar or concrete in a marked degree.

Variations in the colors of the materials, including the pigments themselves, are such as to make color formulas only approximate. Best results are obtained by experiment or trial. After selecting the primary color desired, the exact shade may be determined by preparing a number of small mortar panels which should be made of the same materials and proportions as are intended to be used in the actual work. The ratio of pigment and cement to aggregate should be kept constant. Store the mortar samples for about five days under conditions similar to the actual work. Panels will have a darker shade when damp than when dry.

A general guide to the selection of colors and coloring materials to obtain various effects is given here:

For Blue shades use Prussian Blue or Ultramarine Blue.

For Browns use Burnt Umber or Brown Oxide of Iron.

For Buffs use Yellow Ochre or Oxide.

For Grays use small quantities of Manganese Black or Germantown Lamp Black.

For Greens use Greenish Blue, Ultramarine or Green Oxide or Chrome. A mixture of Yellow Oxide and Ultramarine Blue will also produce a satisfactory green pigment.

For Pinks use small quantities of Red Oxide of Iron.

For Red shades, such as light brick, terra cotta, etc., use Red Oxide of Iron. Venetian Red should be avoided, as it tends to run and fade.

For Slate effects use Manganese Black or German-town Lamp Black. Common Lamp Black should not be used.

Most architects and builders depend upon the reputation of the manufacturer of the pigments for assurance that the quality of the product is satisfactory. It is advisable, however, for the builder to make up test panels, representing the actual use of the coloring matter in stucco mixed under field conditions and with careful measurements.

Materials Required for 100 Square Feet of Surface for Various Thicknesses of Stucco

| THICKNESS | PROPORTIONS | | | |
|-----------|----------------|----------------|----------------|----------------|
| | 1 : 2½ | | 1 : 3 | |
| | Cement (Sacks) | Sand (Cu. Ft.) | Cement (Sacks) | Sand (Cu. Ft.) |
| ⅜ inch | 1.3 | 3.2 | 1.1 | 3.3 |
| ½ inch | 1.7 | 4.2 | 1.5 | 4.4 |
| ¾ inch | 2.5 | 6.3 | 2.2 | 6.6 |
| 1 inch | 3.4 | 8.4 | 3.0 | 8.8 |
| 1¼ inches | 4.2 | 10.5 | 3.7 | 11.0 |
| 1½ inches | 5.1 | 12.6 | 4.5 | 13.2 |

These quantities may vary 10 per cent in either direction due to the character of the sand and its moisture content.

No allowance is made for waste or for keys behind the lath.

Table of Colors to Be Used in Portland Cement Stucco

Amounts of pigment given in table are approximate only. Test samples should be made up to determine exact quantities required for the desired color and shade.

| Color Desired | Commercial Names of Colors for Use in Cement | Pounds of color required for each bag of cement to secure | |
|--------------------------------|--|---|--------------|
| | | Light Shade | Medium Shade |
| Grays, blue-black and black | Germantown lampblack* or | ¼ | 1 |
| | Carbon black* or | ½ | 1 |
| | Black oxide of manganese* or | 1 | 2 |
| | Mineral black* | 1 | 2 |
| Blue shade | Ultramarine blue | 5 | 9 |
| Brownish-red to dull brick red | Red oxide of iron | 5 | 9 |
| Bright red to vermilion | Mineral turkey red | 5 | 9 |
| Red sandstone to purplish-red | Indian red | 5 | 9 |
| Brown to reddish-brown | Metallic brown (oxide) | 5 | 9 |
| Buff, colonial tint and yellow | Yellow ochre or | 5 | 9 |
| | Yellow oxide | 2 | 4 |
| Green shade | Chromium oxide, or | 5 | 9 |
| | Greenish blue ultramarine | 6 | |

*Only first quality lampblack should be used. Carbon black is light and requires very thorough mixing. Black oxide or mineral black is probably most advantageous for general use. For black use 11 pounds of oxide for each bag of cement.

How to Make an Approximate Cost Estimate on Any House Plan

WHEN the average home builder in looking through the plan books or magazines encounters a dwelling plan which appeals to him, his first natural question is "I wonder how much that house would cost."

Cost estimating is at best a hazardous procedure these days, but there is a method by which one can quickly arrive at a fair approximation of how much money must be spent for the actual building of any given house plan. This is known as the cubic foot method of cost estimating and is generally used by architects and builders for tentative figures. The system employed is first to arrive at the total cubic footage contained in the building, including the cellar. The next step is to find out from a local builder or architect about how much per cubic foot houses of various types of construction are costing in the neighborhood. For instance, a fair average figure for the construction of a concrete masonry house might be 50 cents a cubic foot. In other sections of the country it might be higher or lower, depending on local building conditions. It will be noted that each plan shown in this book has with it the cubic footage. If we assume the cost to be 50 cents a cubic foot, then we can immediately be assured that the second prize house shown on page 4 containing 25,346 cubic feet, would cost approximately \$12,673 to build.

It is often the case, however, that published plans of houses are not accompanied by a figure showing the total cubic footage. Therefore, if the home builder knows how to estimate cubic footage, he will be able to determine the approximate cost in the above manner. Estimating cubic footage is not difficult if the horizontal and vertical dimensions of the building are given, and in most house plans they are. A standard method of measuring the cubic footage of a house, which was that required for the Lehigh Portland Cement Home Competition, is:



Perspective Drawing of House for Which Plans Are Shown Below
Carl C. Tallman, Architect, Seward Bldg., Auburn, N. Y.

section drawing showing vertical dimensions. To estimate the cubic footage of this house we first take the main section of the house which is 28' x 28'. We next take the vertical dimension shown on the section plan from the cellar floor to a point one-half the distance from the highest cornice to the ridge. This is 29 feet. These three dimensions must be multiplied together in this way:

$$28' \times 28' \times 29' = 22,736 \text{ cubic feet}$$

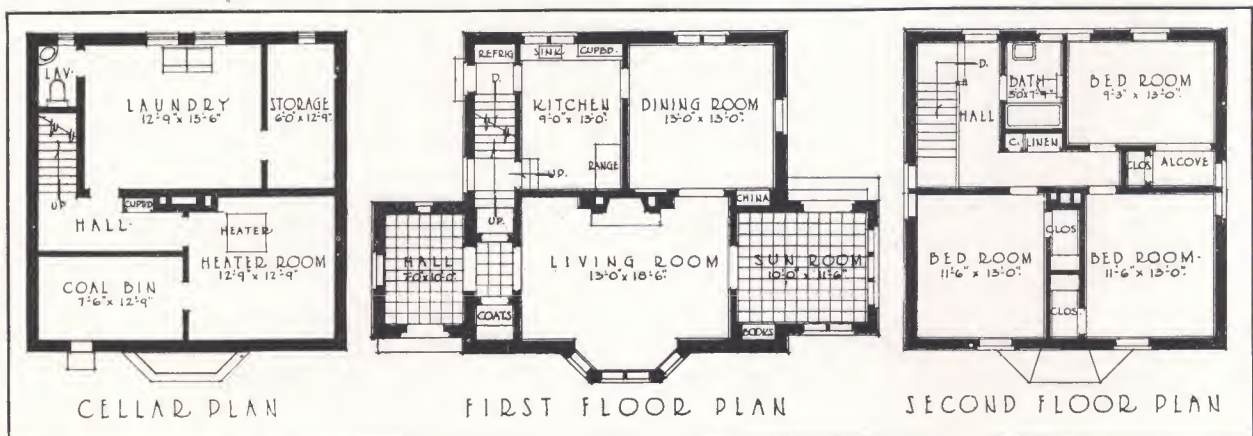
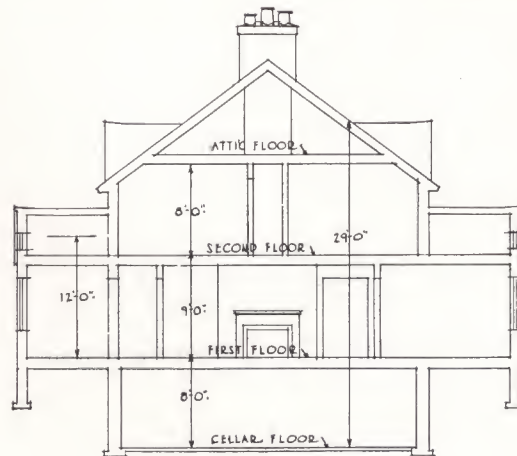
We still have to consider the two wings and the bay. Examining the plan we see that the wings are each 8' x 12' with an average height of 12', so we multiply 2 x 8' x 12' x 12' which equals 2,304 cubic feet. Similarly the bay is 2½' x 9' x 10' which equals 225 cubic feet.

The total cubic footage of this house is therefore to be considered as:

| | |
|------------|--------|
| Main House | 22,736 |
| Two Wings | 2,304 |
| Bay | 225 |

Total Cubic Footage 25,265

At the rate of 50 cents a cubic foot, this house would therefore cost \$12,632.50. This method applied to any residential plan will give an approximate cost estimate which will serve as a general guide for the prospective home owner.



How to Read Your Architect's Working Drawings

AFTER you have retained an architect to design your proposed dwelling, the first step will be a general discussion of the approximate size, type and plan of the house which you desire. The architect will then prepare what is known as the sketch plans and outline specifications. The sketch plans are similar to those presented in this book, consisting of an elevation or perspective drawing of the house together with cellar and floor plans. When you have finally made such changes in the sketch plans as may seem desirable, the architect will then prepare working drawings, details and specifications. You will probably receive three blueprint sets of working drawings, each consisting of several sheets and presenting graphic instructions to the contractor, which, together with the specifications, will serve to direct the construction of the house. At first examination working drawings usually seem very complex to the average home builder, but in reality they are comparatively simple, particularly if the home builder understands the symbols employed. In order to facilitate the reading of working drawings there is presented herewith a descriptive list of the customary symbols as employed by the architect in designing a concrete masonry house.

| | | | |
|---|---|---|--|
|  | Ceiling fixture for electric light. |  | Concrete foundation wall. |
|  | Wall bracket for electric light. |  | Concrete block wall with stucco. |
|  | Combination gas and electric light. |  | Concrete floor in section. |
|  | Electric base plug. |  | Concrete block partition. |
|  | One-way electric switch. |  | Stucco surface on elevation. |
|  | Two-way electric switch. |  | Double-hung window in concrete wall. |
|  | Three-way electric switch. |  | Casement window in concrete wall. |
|  | Toilet shown on plan. |  | Ceiling window in concrete wall. |
|  | Pedestal basin with medicine closet in wall. |  | Arch as shown on plan. |
|  | Basin hung on wall. |  | Door as shown on plan. |
|  | Bathtub of built-in type. |  | Frame partition on plan. |
|  | Bathtub on legs (old style). |  | Dimensions in feet and inches. |
|  | Laundry tubs on plan. |  | Floor beam spacing. |
|  | Sink in kitchen on plan. |  | Concrete block chimneys. |
|  | Drain board with sink. |  | Double-hung window in elevation. |
|  | Kitchen dresser. |  | Casement window in elevation. |
|  | Radiator as shown on plan. |  | Cellar window, showing grade line. |
|  | Hot air floor register. |  | Stairs showing number of steps up, handrail, and newel post. |
|  | Hot air wall register. |  | Hatch to attic or cellar. |
|  | Steam or hot water boiler—or hot air furnace. |  | Square and round columns. |
|  | Storage tank for hot water. |  | Refrigerator drain in floor. |
|  | Gas water heater. | | |
|  | Hose faucet with inside shut-off. | | |
|  | Fireplace as shown on plan. | | |
|  | Ash dump in hearth. | | |
|  | Flue with flue lining. | | |

Additional copies of this book may be obtained through any building supply dealer displaying the blue and white Lehigh Sign or by sending 10 cents to Lehigh Portland Cement Company, Allentown, Pa., or Chicago, Ill.

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